PERFORMANCE ASPIRATION, OUTWARD FOREIGN DIRECT INVESTMENT AND FIRM INNOVATION

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CHAPTER 1: INTRODUCTION

1.1 Background and Motivation

An important component of globalization since the 2000s is the increased participation of developing economies in the global economy (Buckley et al., 2007b; Yiu, Lau, & Bruton, 2007). Specifically, Chinese multinational enterprises (MNEs) have gained significant attention recently. Despite the significance of Chinese outward foreign direct investment (OFDI) in recent years, the conditions prompting decision makers to take OFDI are not well understood. Previous studies analyze the determinants of Chinese OFDI majorly from three perspectives: the resource-based view (Liang, Lu, & Wang, 2012; Lu, Liu, Filatotchev, & Wright, 2014; Yiu et al., 2007), institutional factors in both home and host countries (Wang, Hong, Kafouros, & Wright, 2012b), and industry factors (Wang, Hong, Kafouros, & Boateng, 2012a). However, I propose that a theory of OFDI must include the factors that motivate decision makers to pursue significant changes in corporate activities. The perspective of managers situated within firms and what motivates them to initiate deliberations and search that eventuate in OFDI worth further analysis. Moreover, the outcome of Chinese firms' internationalization is still unclear. Instead of measuring its effect on firms' performance directly, I will examine the effect of Chinese firms' OFDI on their innovation outputs in the home country as strategic asset seeking is one of the major targets for their foreign expansion.

Attention to aspiration and their effect on organizational change are the key component in the behavioral theory of the firm (Argote & Greve, 2007; Cyert & March, 1963; Gavetti, Levinthal, & Ocasio, 2007; March & Shapira, 1987; March & Shapira, 1992; Ocasio, 1997). Based on Cyert and March (1963) behavioral theory of the firm, previous literature offers strategic and behavioral explanations for those factors that

induce or impel organizations to compete and excel in evolving competitive landscapes. Previous literature use behavioral theory of the firm to explain if firms would form non-local ties (Baum, Rowley, Shipilov, & Chuang, 2005a), to engage in R&D investment (Chen, Kuo-Hsien, & Tsai, 2007; Greve, 2003a; Nohria & Gulati, 1996), to select partner of equal or different status (Shipilov, Li, & Greve, 2011), and to carry out acquisitions (Iyer & Miller, 2008), and to introduce new production (Gaba & Joseph, 2013; Tyler & Caner, 2016). In spite of this extensive research, few scholars have used the behavioral theory of the firm to explain a firm's internationalization decisions especially for firms from emerging market. Internationalization has the potential to transform organizations and increase firms' competitive advantages, but they are also fraught with uncertainty. The behavioral theory of the firm (Cyert & March, 1963) offers an excellent platform for decision-making ideas of internationalization as undertaking international expansion is a form of organizational search. It emphasizes the organizational processes of performance evaluation, search, and decision making, and leads to propositions concerning how these affect organizational changes. This theory provides my starting point for theorizing about the determinants of organizational search and change---internationalization.

Luo and Tung (2007) suggest that different from advanced market multinational enterprises (MNEs) which generally leverage and exploit their ownership-specific competitive advantages in foreign countries (Dunning, 1981), emerging market MNEs systematically and recursively use international expansion to acquire critical resources needed to compete more efficiently against global rivals in their home country market. To most Chinese MNEs, their home country markets are still their primary territory of operation (Luo & Tung, 2007). Hence, international expansion is not an end to most Chinese MNEs' success. How to leverage core competences at home and channel back

their strategic assets and capabilities back to their home country is the next target after their foreign expansion. Accordingly, this dissertation attempts to contribute to the literature by investigating the effects of OFDI in developed countries on their innovation in the home country.

This dissertation is undertaken to advance the understanding of how performance relative to aspirations influences firms' OFDI decisions and consequently the firm innovation in the home country. It contributes to the understanding of firms' foreign expansion, and the question regarding internationalization influence on firm innovation.

1.2 Research Questions

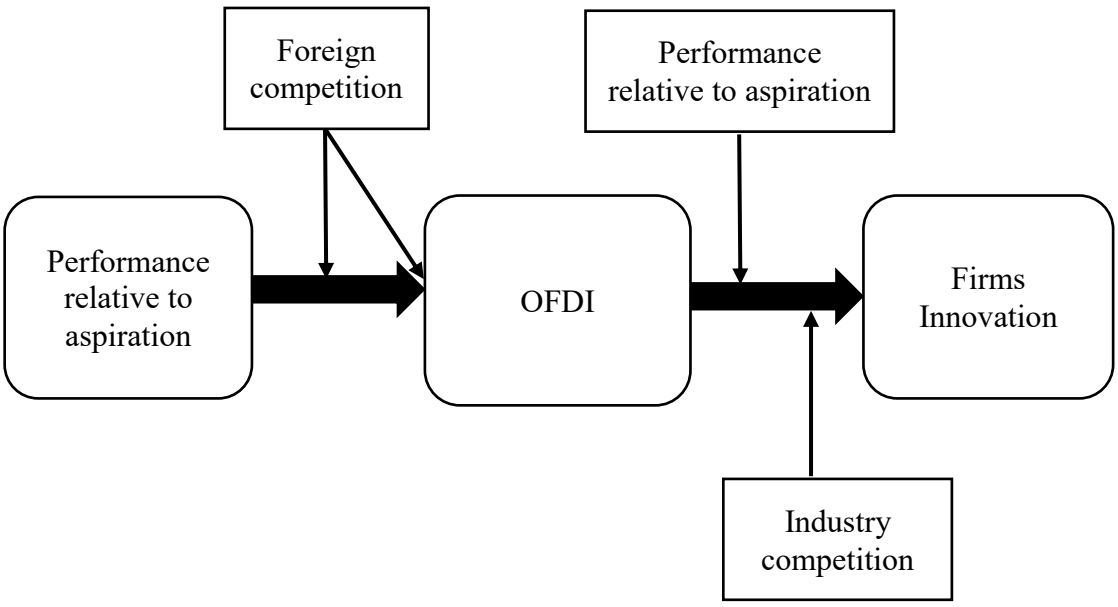
In this dissertation, I attempt to investigate the following two research questions:

1) How does firms' performance relative to aspirations affect the extent of their OFDI?

2) How does firms' OFDI influence their innovation output?

Figure 1 presents the broad overview of the above research questions. Following the figure, I give a summary of each of the two research questions.

Figure 1: Research Framework



1.2.1 Essay 1

Cyert and March (1963) highlighted two key stimuli for search---problems and slack. Problemistic search is an effort to identify alternatives to current activities that resolve performance shortfalls. Slack search occurs when firms possess excess resources that allow for experimentation, which can help firms identify and pursue new opportunities (Levinthal & March, 1981). In the first essay, I investigate behavioral explanations for the Chinese firms' OFDI by focusing on the factors of performance relative to aspiration and extend the model of decision making to a competitive context to develop a theory about how foreign competition in domestic markets affects firms' decision making.

Drawing on behavioral theory of the firm (Cyert & March, 1963), I argue that firms' performance relative to their aspirations will influence their incentives and capabilities to take investment, and thus their decisions of internationalization. For firms performing above aspirations, I propose that the extent of firms' outward FDI increases following slack search argument. For firms performing below aspirations, outward FDI was not their matched solution for performance problem which is not consistent with the problemistic search.

However, foreign competition increases their probability to do the problemistic search through OFDI by affecting their resource allocation and focus of attention. Managers in firms in industries with higher foreign competitions seek to balance their situation by developing foreign market opportunities and relocating their limited resources to foreign markets with higher profitability. Meanwhile, these firms may draw on the experience of foreign firms when selecting the responses to a given performance

problem, which in turn increase their probability to do the problemistic search to undertake OFDI. Although competition plays a significant role in the behavioral theory of the firm, not much research in this tradition has analyzed the role of competition in the formation of performance aspirations and focus of attention. In the first essay, I extend the models' application to organizations' decision making in their OFDI and examines a contingency effect of foreign competition on these predictions.

1.2.2 Essay 2

Following the first essay that analyzes the antecedent of firms' OFDI from the behavioral theory of the firm perspective, I explore the outcome of firms' OFDI with a particular focus on their innovation output in the second essay. This study begins with the observation that Chinese MNEs, as latecomers to international business, are largely in the stage of catching up with developed market MNEs in technological capabilities to be internationally competitive (Mudambi, 2008). Chinese MNEs, therefore, seeking to move from a focus on lower value-added activities, such as standardized manufacturing and services, to higher value-added activities based on R&D (Mudambi, 2008). Chinese firms can improve their technological capabilities by learning and absorbing advanced technological knowledge possessed by companies in developed markets (Child & Rodrigues, 2005; Luo & Tung, 2007; Mudambi, 2008). Thus, following this line of argument, Chinese firms' OFDI could improve their innovation output in their home market.

Previous literature proposed two primary reasons for the massive increase in

Chinese firms' innovation, provincial-level subsidy program and a huge amount of FDI in China (spillover effect). In equity joint ventures (JVs) in China, foreign partners are often concerned about the potential for opportunism by their Chinese partners who develop capabilities through alliances that can be used later to compete against them not only in China, but also in the global marketplace (Buckley, Clegg, & Tan, 2004). As many foreign firms with superior technology are reluctant to transfer their superior technology, JVs in China do not appear to build Chinese proprietary knowledge (Nolan, 2001). Since inward FDI and particularly JVs cannot bring in some types of strategic assets, outward FDI becomes a logical option to fill these resource gaps. Consequently, in the second essay, I explore the effects of firms' internationalization on their innovation output and the contingency effects of performance aspirations and industry competition. Specifically, I propose that outward FDI in developed market improve firms' innovation output in their home country. Also, performance below aspiration level alleviates the benefits of OFDI on innovation, and industry competition strength the effects of OFDI on innovation.

1.3 Contribution

I sought to make several major contributions in the following perspectives. First, the behavioral theory of the firm provides a unique lens to study firms' internationalization. My intention is that a theory of OFDI must include the factors that motivate managers to pursue significant changes in corporate activities. To address this issue, one needs to understand the perspective of managers situated within firms and what motivates them

to initiate deliberations and search that eventuate in OFDI. Hence, I propose a behavioral explanation for the OFDI decisions.

Second, I extend the decision-making model to a competitive context. This extension draws attention to firms performing above or below aspiration level differences when they face foreign competitions in domestic markets. Foreign competition persuades companies to take the foreign expansion. More specifically, as foreign competition influences firms' resource allocation and focus of attention, it has a stronger effect for firms performing below aspirations.

Third, although the behavioral theory of the firm is an important way to analyze firms' decision making, to date, it has rarely been examined in the context of emerging markets. To advance this perspective, I investigate OFDI decisions of Chinese listed firms as China provides a suitable platform for exploring the relationships I outlined because it is an attractive destination for foreign firms, which helps me analyzed the foreign competition effects. Moreover, Chinese firms are increasingly taking part in outward FDI in recent years. This empirical setting provides us an efficient way to understand the emerging phenomenon (Luo & Tung, 2007; Ramamurti & Singh, 2009) which, in turn, helps advance the theory.

Fourth, this dissertation tries to contribute to learning theory and innovation literature and proposes that different from inward FDI as a passive learning model, outward FDI to developed countries could be an active learning process especially for emerging market MNEs to access resources in foreign markets. Moreover, this study further figures out that the effect of outward FDI on innovation depends on their

performance relative to aspirations, and industry competition. In some circumstances, an OFDI project is an efficient way for firms to access a broad range of external resources that is quite hard to access through market transactions. Moreover, the following learning-by-doing practices could help them to internalize the external resources in a complete manner.

Finally, this study contributes to the empirical analysis of innovation research in China. The existing literature on innovation and patenting issue in China is limited. Even though there is some studies at the aggregate, industry, and province level, firm level analysis is seldom. I construct a novel firm-level dataset that combines listed firms' internationalization and patent data between 2002 and 2010 and analyzes the effects of Chinese firms' internationalization on their innovation output.

1.4 Outline

I organize my thesis as follows. Chapter 2 reviews the literature on the behavioral theory of the firm, Chinese firms' OFDI, and firms' innovation respectively. Chapter 3 introduces the empirical context of this dissertation: Chinese listed firms' internationalization and the patent system in China. In Chapter 4, I draw on behavioral theory of the firm to propose hypotheses regarding the effects of performance aspirations on the extent of firms' internationalization. Chapter 5 addresses the second research question that analyzes the effects of firms' OFDI on innovation. In Chapter 6, I summarize the major findings of the current studies and discuss contributions of the dissertation and each essay separately. Chapter 7 conclude the dissertation.

CHAPTER TWO: LITERATURE REVIEW

2.1 Drivers of outward FDI

Previous studies examine the forces driving outward FDI of Chinese firms from following major perspectives: the resource-based view of the firm, resource-dependency theory, institutional theory, and industrial organization economics. Table 1 presents a summary of these studies. Much of the research on the international expansion of MNEs is rooted in the notion of firm-specific advantages (Hymer, 1976). This view posits that firms engage in the international expansion when they seek to leverage their firm-specific advantages in new settings.

The resource-based view (RBV) asserts that resources that are valuable, rare, imperfectly imitable and imperfectly substitutable are a company's primary source of competitive advantage (Barney, 1991). It has recently guided inquiry into the antecedents of outward FDI (Hitt, Bierman, Uhlenbruck, & Shimizu, 2006; Hitt, Tihanyi, Miller, & Connelly, 2006; Tseng, Tansuhaj, Hallagan, & McCullough, 2007; Tuppura, Saarenketo, Puumalainen, Jantunen, & Kyläheiko, 2008). As it focuses on differences in distinctive firm characteristics, RBV is a significant departure from Neo-classical market-based theory on the industrial organization (Mahoney & Pandian, 1992). Based on resource-based view, foreign expansion is an effective way to appropriate rents in foreign markets by exploring and exploiting valuable resources. Deploying resources that possessed by the firm in multiple foreign markets could help them balance the costs and risks incurred in overseas those originated from liability of

foreignness and greater managerial complexity (Tseng et al., 2007), and reach economies of scale (Hitt, Hoskisson, & Kim, 1997). The RBV is compatible with mainstream conceptualizations of international expansion (Dunning, 1993), as ownership advantages are conceptually similar to the firm's value-generating resources. As a result, some prevailing approaches to outward FDI such as resource-exploitation, asset-seeking, and knowledge sourcing rest upon the resource-based view.

By using a survey data of CEO over 3000 firms, Lau, Ngo, and Yiu (2010) propose that different resources endowments have a different relationship with internationalization decisions. Specifically, they discover that production, sales, operations and finance resources have a positive impact on Chinese OFDI. Moreover, Liang et al. (2012) report that resource endowment advantages of private enterprises compared with foreign-invested enterprises and the organizing capability advantages of private enterprises over state-owned enterprises (SOE) positively relate to a firm's likelihood of outward internationalization. This finding supports the mainstream perspective and is consistent with the previous research of Yiu et al. (2007). Based on the knowledge-based view, Lu et al. (2014) propose that firms' domestic industrial and regional diversification positively influence their international diversification. Also, top management team (TMT)'s previous international experience strengthens the relationship, whereas TMT's prior political connections weaken the relationship.

However, firm-specific factors seem to be also related to institutional factors in determining firms' internationalization. While the literature has paid lots of attention to host country institutions (Deng, 2009; Meyer, Estrin, Bhaumik, & Peng, 2009; Meyer

& Sinani, 2009; Xia, Tan, & Tan, 2008), scholars begin to recognize that we should pay attention to home country institutions in exploring the internationalization of emerging market firms (Cuervo-Cazurra & Dau, 2009; Del Sol & Kogan, 2007; Luo & Tung, 2007; Witt & Lewin, 2007). These findings thus promote an interest in probing the role played by home country institutions behind outward internationalization and propose two opposite views on this issue.

The "escape" view argues that outward FDI from emerging markets is in part an escape response to a burdensome home country institutional environment (Cuervo-Cazurra & Genc, 2008; Witt & Lewin, 2007). Because of the institutional constraints, some scholars propose that the primary motivation to go abroad for emerging market firms is to avoid the disadvantages incurred by home country institutions instead of leveraging their competitive advantages (Boisot & Meyer, 2008; Child & Rodrigues, 2005; Hoskisson, Wright, Filatotchev, & Peng, 2013). Luo and Tung (2007) identify the "pull factor" of emerging market MNEs that "use outward investment as a springboard to acquire strategic assets needed to compete more efficiently against global rivals and to avoid the institutional and market constraints they face at home."

In contrast, the "fostering" view suggests a facilitating role of advanced institutions that promotes firms' outward internationalization (Wan & Hoskisson, 2003). From this perspective, firms do not necessarily react to institutional constraints, but strategically explore institutions as opportunities (Jonsson & Regnér, 2009). In other words, emerging market firms could utilize government intervention as a positive "push factor" behind their internationalization (Wang et al., 2012b). In the internationalization

process, government support could provide firms the privileged access to low-cost capital, subsidies, and raw materials, which are essential for their success in the foreign expansion. (Buckley et al., 2007b; Cui & Jiang, 2010; Luo, Xue, & Han, 2010; Morck, Yeung, & Zhao, 2008). In addition to the home country institutions, scholars also analyze the institutions at the sub-national level. Sun, Peng, Lee, and Tan (2014) propose that greater institutional open access in a region of a home country leads to greater OFDI of local firms headquartered in that region. Further, the tenure of that region's governor moderates such relationships in different ways.

By integrating resource-based view and institutional theory, Wang et al. (2012b) suggest that government involvement influences the level of OFDI, although not all firms possess equal abilities to internalize government-related advantages. Huang and Renyong (2014) report that Chinese private firms are increasingly active in a market- and strategic asset-seeking OFDI because of the unfavorable environment they face at home and the different resources they possess. By integrating institutional theory and agency theory, Liu, Lu, and Chizema (2014) figure out that both of the top-executive cash pay and equity ownership are primary factors in affecting OFDI. Sub-national institutions positively moderate the governance role of managerial equity ownership. Also, Liang, Ren, and Sun (2015) report that both of the state ownership control and executives' political connections affect firms' globalization decisions. Moreover, these two factors are contingent upon the home country's evolving institutional environments.

Traditional industrial organization thinking emphasizes that the conditions such as entry barriers and competitive rivalry within a given industry affect a firm's strategy

and performance (Porter, 1990). Furthermore, these conditions may shape the extent to which a firm is likely to achieve positional advantages. Building on this framework, one may suggest that a firm's internationalization decisions are a result of the level of the competition in the industry in which the firm operates (Boter & Holmquist, 1996; Hymer, 1976). In other words, the firm may pursue foreign expansion to find new profitable opportunities facing the level of high competition within an industry (Yang, Jiang, Kang, & Ke, 2009). Xia, Ma, Lu, and Yiu (2014) explore that multiple forms of interdependence between Chinese and foreign firms in China such as symbiotic, competitive, and partner interdependencies positively affect the level of the Chinese firms' OFDI activity. Moreover, state ownership negatively moderate these relationships. Additionally, rivalry-based theories of mimetic behavior suggest that competitors that operate in the same industry would influence a firm's international expansion (Knickerbocker, 1973).

Except competitions, industries also differ in their globalization potential, technological opportunities, and policy, which may account for variations in OFDI across different industries. First, sectors that rely on a standardized product or service such as microchips and engine components have a higher degree of globalization compared to sectors that produce consumer products in which preferences are influenced by culture and other country-specific characteristics. Second, outward FDI is more pronounced in sectors with high technological opportunities as technological advances are renewed quickly in these industries (Klevorick et al., 1995). Third, industries that are experiencing rapid deregulation may persuade firms to take

internationalization. For example, in the telecommunications industry, the ongoing regulatory liberalization and privatization have made it much easier for firms to expand overseas through acquisitions. Overall, this discussion suggests that differences in the level of internationalization stem from variations in the characteristics of industries.

From the industry perspective, Luo, Zhao, Wang, and Xi (2011) report that industry structure uncertainty and firm-specific advantages increase the level of Chinese OFDI. The interdependence between institutional, industry and firm-specific factors is more evidence in some papers that adopt the so-called strategy tripod perspective. Thus, Lu, Liu, and Wang (2010) suggest that supportive government policies are important motivators for both strategic asset- and market-seeking OFDI; however, firms' technology advantages and R&D industry intensity tend to motivate strategic asset-seeking OFDI, whereas firms' export experience and high domestic industry competition tend to induce market-seeking OFDI. Wang et al. (2012a) report that government support and the industrial structure of the home country play a greater role than firms' technological and advertising resources.

However, these firm characteristics, industry, and institutional explanations cannot account for firms' motivations from managers' perspective in affecting their OFDI decisions. My contention is that the determinants of OFDI must include the factors that motivate managers in particular firms to pursue major changes in their corporate activities. Specifically, to address the determinant of OFDI, it is necessary to understand the perspective of managers situated within firms and what motivates them to initiate a search that eventuates in OFDI.

Table 1: Drivers of Chinese firms' OFDI

Authors	Theoretical perspective	Data	Major Findings
Lau, Ngo, & Yiu (2010)	Resource-based view	A survey data of CEO over 3000 firms in the year 2000	Different resources endowments have different relationships with internationalization decisions. The intention of going international is affected by organizational competencies of R&D and manufacturing.
Liang, Lu, & Wang (2012)	Resource-based view	A survey data from CEOs of 553 private enterprises in eight major cities spreading across the Pearl River Delta and Yangtze River Delta region	Chinese firms' likelihood of venturing abroad is associated with resource endowment advantages vis-à-vis foreign-invested enterprises, organizing capability advantages vis-à-vis state-owned enterprises, and organizing capability disadvantage vis-à-vis foreign-invested enterprises.
Lu, Liu, Filatotchev, & Wright (2014)	Knowledge-based view	Chinese listed firms except financial firms during 2002-2009	International diversification is positively affected by firms' domestic industrial and domestic regional diversification. Also, top management team (TMT)'s previous international experience strengthens the relationship, whereas TMT's prior political connections weaken the relationship.
Wang, Hong, Kafouros & Wright (2012)	Resource-based view Institutional theory	A firm-level dataset by matching firms from ARIES with OFDI information in MOC OFDI database in 2006 and 2007	Government involvement influences the level of overseas investment, its location, and its type. These effects also depend on firms' own resources and capabilities.
Huang & Renyong (2014)	Resource-based view Institutional theory	Interviews with senior managers of private enterprises in Zhejiang	Chinese private enterprises are increasingly active in committing both markets- and strategic asset-seeking OFDI due to the unfavorable institutional environment they face in China and the different types of resources possessed.
Liu, Lu, & Chizema (2014)	Institutional theory & Agency theory	Chinese listed firms except financial firms during 2002-2007	Top-executive cash pay and equity ownership have a positive association with OFDI. Sub-national institutions within China positively moderate the governance role of managerial equity ownership.

Liang, Ren, & Sun (2015)	Institutional theory & Agency theory	Chinese listed firms except financial firms during 2001-2011	The diminishing impact of executives' political connections and the increasing impact of state ownership control on firms' degree of globalization demonstrate the evolving relationship between the state and the managers, as well as the dynamics of state control in globalizing SOEs.
Sun, Peng, Lee, & Tan (2014)	Institutional theory	Chinese listed firms except financial firms between 2001 and 2005	Greater institutional open access in a region of a home country leads to greater OFDI of local firms headquartered in that region. Further, tenure of that region's governor moderates such relationships in different ways
Lu, Liu, & Wang (2010)	Resource-based view, Industry dynamics, Institutional theory	Questionnaire survey conducted by CASS and ACFIC in 2008	Supportive government policies are important motivators for both strategic asset-seeking and market-seeking OFDI. Firms' technology-based competitive advantages and a high level of industry R&D intensity tend to motivate strategic asset-seeking OFDI, whereas firm's export experience and a higher level of domestic industry competition tend to induce market-seeking OFDI.
Wang, Hong, Kafouros, & Boateng (2012)	Resource-based view, industrial organization economics, Institutional theory	A firm-level dataset by matching firms from ARIES with OFDI information in MOC OFDI database in 2006 and 2007	Government support and the industrial structure of the home country of the investing firms play a crucial role in OFDI. By contrast, technological and advertising resources tend to be less important.
Xia, Ma, Lu, & Yiu (2014)	Resource-dependency theory	Chinese listed firms in manufacturing industries during 2000-2007	The level of interdependence between Chinese and foreign firms in China in multiple forms, including symbiotic, competitive, and partner interdependencies, is positively associated with the level of the Chinese firms' OFDI. However, Chinese firms with higher levels of state ownership are less susceptible to the pressures imposed by foreign firms to invest abroad.

2.2 A Behavioral Theory of the firm

A central idea in learning theory---that organizations learn from their past performance, which conditions subsequent actions (Cyert & March, 1963; Levitt & March, 1988) has led to an interest in how organizations' performance affects the likelihood of different types of action (March, 1988; Miller & Chen, 1994; Ocasio, 1995). In the behavioral view, organizations are goal-directed systems that use simple decision heuristics to adapt behavior in response to performance feedback. In other words, performance relative to aspirations triggers an organizational search. Schneider (1992) described an aspiration level as the "smallest outcome that would be deemed satisfactory by the decision maker".

One important idea behind this research is that decision makers' actions differ depending on whether their performance is above or below some goal or aspiration level relative to either their historical performance or social performance relative to their peers (Greve, 1998, 2003a; Greve, 2003b; Kahneman & Tversky, 1979; March & Shapira, 1992; Milliken & Lant, 1991). In other words, bounded rational decision makers use aspirations to determine the boundary between success and failure in continuous measures of performance (Fiegenbaum, Hart, & Schendel, 1996; Greve, 2003b; Lant, Milliken, & Batra, 1992). Decision makers appear to increase their emphasis on exploratory search and be more willing to engage in riskier behaviors with more uncertain outcomes (e.g. reorient strategies, change markets, introduce new practices and processes, raise R&D intensity, emphasize breakthrough innovations, launch products based on new technologies) when their performance differs from their

goal or aspiration level (Audia, Locke, & Smith, 2000; Greve, 1998, 2003a; Greve, 2003b; Lant et al., 1992; Mezias, Chen, & Murphy, 2002; Nohria & Gulati, 1996).

Models of aspiration performance are central to research on organizational and managerial risk taking (Bromiley, 1991; Greve, 1998; Greve, 2003b; Lant, 1992; March & Shapira, 1992). Decision makers are more likely to engage in risky behavior when their organizations fail to attain or exceed a goal or aspiration level---a reference point that identifies the boundary between perceived success and failure (Cyert & March, 1963; Kahneman & Tversky, 1979; March, 1988; March & Simon, 1958). Performance feedback models have proven influential in explaining managerial risk taking on a broad range of organizational actions. Based on the review of research on performance feedback models, Greve (2003b) concluded that performance relative to aspiration levels appears to serve as a "master switch" influencing risk taking across a wide range of organizational behaviors.

When an organization is performing below aspirations, its decision-makers emphasize more-exploratory nonlocal search and larger changes with the potential to raise the organization's performance closer to aspirations (Singh, 1986). Performance below aspirations triggers the problem-driven search, stimulating exploration of new practices and courses of action, with the extent of search and change depending on how far performance is below the aspiration point. Studies show that performance below aspirations leads to decision makers to initiate experimentation to identify new opportunities to solve their performance shortfalls. However, in empirical tests, the effects of changes in performance when performance falls below the aspiration level

remains subject to active debate (March & Shapira, 1992; Ocasio, 1995; Sitkin & Pablo, 1992).

Greve (1998) find that decreases in performance increased the risk taking of firms below the aspiration level. Similarly, Ketchen and Palmer (1999) find that low performance increased organizational risk taking. Miller and Chen (2004) report that decreases in performance increased organizational risk taking in all ranges of performance. However, Miller and Bromiley (1990) find that deterioration in performance increased risk taking for high performers but decreased it for low performers. Wiseman and Bromiley (1996) find that lower performance caused less risk taking in a sample of declining firms. Moreover, Iyer and Miller (2008) explore that acquisition activity increases as performance rises among firms performing below aspiration. Gaba and Joseph (2013) propose that poor performance at different levels of the firm may not have uniform consequences for the behavior of business unit managers, a central driver of adaptive change. Based on the analysis on mobile device manufacturers for the period 2002-2008, they report that poor performance at the business unit level has a positive effect on new product introductions. In contrast, firms introduce less new product facing corporate-level performance problems (Gaba & Joseph, 2013).

A substantial body of research suggests that performance far above aspirations also has an effect on risk taking. The performance feedback model suggests that organizations performing above their aspiration levels may engage in greater learning and change than those performing at or near their aspiration levels. This slack-driven

search prediction stem from the idea that performance above aspiration leads to nonlocal search, experimentation, and change because success provides organizational decision makers with access to resources and instills confidence in their abilities to pursue new initiatives (Cyert & March, 1963; Levinthal & March, 1981; March & Shapira, 1992). Although some types of high performance may not create slack resources (Greve, 2003a), most types lower the cost of resources (Aldrich & Auster, 1986).

Baum, Rowley, Shipilov, and You-Ta (2005b) report that slack-driven search may increase the tendency of decision makers to initiate risky nonlocal partnerships in the hope of even greater gain based on Canadian investment banks from 1952 to 1990. By analyzing US Class 1 freight railroads' accident costs from 1975 to 2001, Baum and Dahlin (2007) find that when performance exceed and away from aspirations stimulates nonlocal search and exploration. An exception is Greve (1998), who predicted that performance above aspirations would lead to complacency and less risk taking in his study of radio stations. He noted, however, that his prediction and supportive findings were likely to be particular to the product-market decision he examined. Product-market strategies are unlikely to be susceptible to change when organizational performance is above aspirations because such an action would entail abandoning the strategy that generated the performance in the first place. Unlike changing product-market strategies when performance is above aspirations, taking on new nonlocal partners, investing in R&D and other strategies does not preclude organizations that are performing above aspirations from their previous strategies (Baum et al., 2005b).

In recent years, the application of the behavioral theory of the firm expands to a broader context and in more detailed analysis. Based on Jeopardy, the TV game show in 1990 and 2001, Boyle and Shapira (2012) figure out leaders focus on their aspiration point, whereas followers' focus of attention shifts between their aspiration and survival points. Also, leaders are prone to take excessive risks to maintain their leadership position. Blettner, He, Hu, and Bettis (2015) report organizations pay more attention on their aspirations when early in their life cycle. However, they tend to focus more on their competitors' performance when at the verge of bankruptcy. Kim, Finkelstein, and Haleblian (2015) posit that historical and social aspirations, in fact, lead to dissimilar firm behavior. In the context of merge and acquisitions within the US commercial banking industry from 1988 to 2005, they find that firms' acquisition behavior varies significantly depending on whether historical or social comparisons are used.

Cyert and March's seminal behavioral theory is one of the two major economics-based theories of the firm that goes inside the "black box" (of the firm) ---the other being the contribution of Edith Penrose, or subsequently developments in the resource-based view (Pitelis, 2007). Both of these theories share the idea that firms are proactive organizations, that any examination of the firm requires looking at inside the firm, that firms read the external environment through an organizational filter, and that as a result there exists imperfect environmental matching. Both theories rely on uncertainty, limited rationality, and learning. By integrating the behavioral theory of the firm and the resource-based view, this dissertation tries to provide a more comprehensive picture on firms' decision making.

2.3 Outward FDI and Innovation

2.3.1 Limitations of the inward FDI learning model

Considerable attention to date has been paid to China as a host country for internationally expanding investing firms (Huang, 2003). This is understandable in the light of the fact that China has absorbed massive amounts of inward foreign direct investment, and is the world's largest recipient of such investment (UNCTAD, 2013). Some may wonder why Chinese firms with strong catch-up strategies are not taking advantage of huge inward FDI and particularly equity joint ventures in China to source strategic assets. Indeed, literature has documented that Chinese firms have benefited substantially from inward FDI and especially equity JVs that were originally intended to serve the Chinese domestic market (Li, Chen, & Shapiro, 2013; Luo, 2004). These so-called 'spillovers' are defined as positive externalities that benefit domestic firms with the presence of FDI, which can result in productivity increases among local firms (Blomstrom, 1986; Caves, 1974; Spencer, 2008).

From a managerial perspective, JVs may be the most efficient vehicle with which to transfer tacit knowledge and hence makes more sense from the standpoint of a player who needs to catch up (Lane, Salk, & Lyles, 2001). Moreover, inward investment has deepened Chinese firms' understanding of international markets and helped them accumulate international experience and considerable financial and operational assets. Building on their unique capabilities and learning experience with inward FDI, Chinese firms are most likely to accelerate their subsequent outward FDI and increase their commitment to international markets (Luo & Tung, 2007).

Previous studies have produced mixed findings on FDI spillovers in emerging market. Some studies have found evidence of positive spillover effects from FDI to emerging market firms (Blomstrom, 1986; Buckley, Clegg, & Wang, 2002, 2007a; Sinani & Meyer, 2004; Tian, 2007; Wei & Liu, 2006). In contrast, other studies have found no evidence (Haddad & Harrison, 1993) or contradictory evidence(Aitken & Harrison, 1999; Konings, 2001), of technology spillovers from multinationals to local firms. In recent years, Chang and Xu (2008) further proposed that increased presence of foreign firms could increase survival rates of local firms nationally, but decrease their survival rates of local firms in regional markets. Zhang, Li, Li, and Zhou (2010) proposed that the diversity of FDI country origins can facilitate FDI spillovers. Innovation clusters of inward FDI and exporting activities, serving as foreign knowledge access channels, foster innovative capabilities of firms in emerging markets (Li, Chen, & Shapiro, 2010). Li et al. (2013) using more than 346000 Chinese manufacturing firms from 2000 to 2006 find that concentrated foreign innovative activities in the industry have a positive effect on Chinese firms' product innovation. However, as foreign presence increase to a certain level, the spillover benefits decrease quickly and then replaced by the crowding-out effect. Meanwhile, inter-industry spillover effect also existed in a city. The diversity of industries with a foreign presence also improves Chinese firms' product innovation.

Emerging market enterprises have benefited tremendously from inward FDI (Luo & Tung, 2007). Inward FDI could help local firms accumulate considerable financial and operational assets, upgrade technological skills, and develop unique capabilities

(Young, Huang, & McDermott, 1996). Although indirect, inward internationalization has deepened emerging market businesses' understanding of international markets and helped them develop international experience, in turn, allow them to undertake outward FDI later in some unconventional ways (Luo & Tung, 2007).

On the other hand, the inherent disadvantages of JVs could act as another powerful stimulus for Chinese MNEs to engage in outward FDI. In equity JVs in China, foreign partners contribute superior technology and know-how. They are often concerned about the potential for opportunism by their Chinese partners who develop capabilities through alliances that can be used later to compete against them not only in China but also in the global marketplace (Buckley et al., 2004). Because of significant knowledge exposure, foreign partners in China may intentionally impede the transfer of knowledge or buffer the core competencies they believe crucial to their competitive advantage. As many foreign firms with superior technology are reluctant to transfer their superior technology, JVs in China do not appear to build Chinese proprietary knowledge (Nolan, 2001). Indeed, according to a survey covering 2334 Chinese industrial firms, technology transfer is very poor among partners of JVs in China (Guan, Mok, Yam, Chin, & Pun, 2006), and the transferred knowledge tends to diminish in quantity and quality (Buckley et al., 2004). Even for some of the most successful JVs in China like VW Shanghai and GM Shanghai, technology transfer to Chinese partners is far from satisfactory (Huang, 2003). Shanghai Automotive (SAIC) is desperately frustrated that Volkswagen and GM did not bring sufficient technology, and it has now shifted its strategy toward acquisition. Recently, SAIC purchased a controlling stake in South

Korea's SsangYong Motor Company in an attempt to build its proprietary knowledge.

On top of that, strategic assets such as R&D capacity, design know-how, and brand names are embedded in advanced country firms, which can usually be accessed by the takeover of these firms or their subdivisions. Since inward FDI and particularly JVs cannot bring in some types of strategic assets, OFDI becomes a logical option to fill these resource gaps.

2.3.2 OFDI as an active learning process

Perceiving the limitation of inward FDI learning model, some learners are motivated to seek alternative sources of their capabilities. For example, an appropriate OFDI project could help firms access a broad range of external resources that are hard to access through market transactions. In this way, outward FDI may benefit firms that are initial without competitive advantages to shorten the distance from leading companies in the world markets by accessing appropriate assets and resources. Accordingly, compared to inward FDI learning model, OFDI can be considered as an active learning process. A growing number of papers argue that EM MNEs, including Chinese MNEs, use outward FDI to acquire brands, technology, and management expertise in psychically distant developed markets via aggressive strategic-asset-seeking (SAS) acquisitions (Deng, 2009; Luo & Tung, 2007). Li, Li, and Shapiro (2012) argued that a host country's industry-specific technology advantage increases the propensity of Chinese MNEs to invest in the host country.

For example, Lenovo established an equity JV with a Hong Kong company and the

JV helped Lenovo trade and later manufacture motherboards and primarily add-on cards. This partnership not only accumulated needed capital and organized sales channels but also provided Lenovo with the opportunity to closely scrutinize foreign product designs and customer response. However, because of the breadth of technologies and capabilities, Lenovo recognizes that it must possess its proprietary technology. At the same time, facing more cut-throat competition in the domestic marketplace, Lenovo's decision makers increasingly believe that international expansion is an essential stepping-stone for growth. With Lenovo aiming to compete globally, it needs to move into high technology, sophisticated products, and services. To this end, Lenovo acquired IBM's PC business to strengthen its capabilities not only in the domestic market but also in global markets.

However, the literature leaves us with a little insight on whether the Chinese firms' catch-up process could improve their innovation outputs and qualities. For example, while scholars like Zeng and Williamson (2007) and Luo and Tung (2007) document the emergence of some highly innovative emerging market MNEs, there are other indications that latecomer emerging market MNEs may be less innovative and more imitative (Luo, Sun, & Wang, 2011). For example, Amsden and Tschang (2003) point out that although firms from emerging economies are increasingly undertaking a range of R&D activities, the complexity of technological activities is still substantially lower than that found at the technological frontier. To solve these issues, I will explore the relationship between outward FDI and Chinese firms' innovation in Chapter 4.

2.3.3 Innovation Studies in China

Innovative activity is a major source of firms' competitive advantage (Porter, 1990). However, our understanding of the determinants and outcomes of innovative activity majorly comes from studies of firms in developed markets as most innovative activity has occurred in those markets (Cohen & Levinthal, 1990). Although emerging market firms are usually regarded as laggards in innovation, especially in cutting-edge innovations (Altenburg, Schmitz, & Stamm, 2008), recent evidence suggests that emerging market firms do in fact innovate (Lu, 2000). For example, Chinese computing companies and Indian pharmaceutical companies can develop new products either by adding value to foreign products or by developing new products to meet specific domestic demands (Lu, 2000). These companies are usually the innovation leader in their domestic markets, and also able to compete successfully in global markets (Altenburg et al., 2008). Despite these developments, research on innovation by emerging market firms are still limited (Horng & Chen, 2008; White, Hoskisson, Yiu, & Bruton, 2008).

Specifically, the existing literature on patenting, one of the primary measurement for innovation, in China is surprisingly sparse because of the data limitation. Even though there is some research on patenting at the aggregate, industry and province level, there is seldom research at the firm level. So far, the existing studies have majorly focused on the effect of technology transfer on their performance (Hu, Jefferson, & Jinchang, 2005) as well as the patenting activity of foreign firms relative to Chinese domestic firms (Hu, 2010). Table 2 presents a summary of studies on innovation on

Chinese context.

Using patent renewal information in the SIPO, Zhang and Chen (2012) notice that the patents requested by foreign applicants have a higher value than those requested by domestic applicants. However, a time trend analysis did not verify if the lower value of domestic patents is influenced by the recent explosive growth of patenting. By analyzing the patent data at the industry level, Hu (2010) investigates that patenting by foreign firms in China increased over 30 percent per year between 1995 and 2004. The analysis relies on a concordance table that allocates patent across industries. Based on this concordance table, Hu finds three industries machinery, chemicals, and telecommunications equipment have the largest number of patents in China. Import competition is the primary driven for the patenting by foreign residents in China. In other words, the amount imported by China from technologically similar industries in other countries positively influence foreign patenting.

By investigating the province-level data for 1985-1995, Sun (2000) explores that output and employment of state-owned and collective enterprises are important sources in innovation output. The result is not surprising as the period is before FDI or private enterprise made a substantial impact on Chinese development. The R&D activity measured in this study was narrowed to universities and government R&D institutions, again a reflection of the scarcity of business enterprise R&D at that time. Based on provincial data from 1995 to 2000, Cheung and Lin (2004) find that the presence of FDI has a robust positive effect on patenting by domestic innovators, with R&D inputs also positive and significant but export volumes insignificant. Yueh (2009) explores the

determinants of aggregate patent counts in 29 Chinese provinces for the period 1991 and 2003 and argues that there are substantial differences in patenting activity across provinces. This finding is not surprising based on the heterogeneity in economic progress between the Eastern and the Central provinces. Moreover, Li (2012) explores that subsidy programs proposed by local governments could stimulate patent application, and the grant rate did not decrease in recent years, which means subsidiary programs did not generate patent bubbles.

In recent years, scholars start to match patent data with firms' information to better analyze the determinants of firms' innovation. Hu and Jefferson (2009) conduct their analysis at the firm-level exploiting a large National Bureau of Statistics dataset and focusing on domestic patenting with SIPO during 1995-2001. The main limitation of the analysis is that only firms' self-reported patent counts are available. Firms only report an aggregate patent count, not distinguishing between innovation, utility, and design patents. Since only innovation patents require an examination by SIPO, utility and design patents are likely to protect innovations characterized by a lower incentive step and thus to embody little technological progress. Hu and Jefferson (2009) explain the recent increase in firms' patenting activity in China by the presence of FDI, the change in the patent law and the anticipation of China's WTO accession in 2001. The authors also find the Patents-R&D elasticity to be higher for domestic than for foreign-owned companies, which they explain by suggesting that foreign firms conduct R&D in China primarily to adapt existing products and patent existing inventions.

Eberhardt, Helmers, and Yu (2011) analyzes characteristics of the explosion of

patent filings by Chinese firms both domestically and in the United States. By constructing a firm-level dataset matching USPTO and SIPO patents to Chinese manufacturing census data for 1999-2006, they investigate the drivers of the explosion in patent applications in China. Their results show that there is a significant difference in the firm characteristics in these two categories of patenting, patenting an innovation with both SIPO and USPTO, and merely patenting with SIPO. They find that firms which fall into the former category tend to be younger, considerably more export-oriented and larger than their peers which the only patent in China. Similarly, using a merged dataset of Chinese patent data and industrial survey data with a focus on patenting activities of Chinese large and medium-sized enterprises under local patent subsidy programs, Dang and Motohashi (2015) make a bibliometric analysis and test if patent statistics are a good indicator of innovation in China. Their empirical results prove that patent statistics are important indicators of innovation as the patent count is related with R&D input and financial output.

Based on Chinese acquisitions of innovatively developed market firms in the US, Japan and Europe, Anderson, Sutherland, and Severe (2015) found that measures of domestic innovation performance in China significantly improve in the wake of these acquisitions. The innovative activity in the acquired developed market firms, however, does not significantly change. Drawing on agency theory, Jia, Huang, and Zhang (2015) show that agency costs generate imbalanced outcomes in innovation---the Chinese listed SOEs with severe agency costs responded to the implementation of the public policy incentivizing innovations by increasing the rate of patent production but they

lowered the rate at which they generated novel patents.

To contribute to the innovation literature on Chinese firms, I will investigate the OFDI and firm innovation relationship in Chapter 4 by matching Chinese listed manufacturing firms with their patenting data in SIPO

Table 2: Analysis on Chinese Patent data

Authors	Data	Major Findings
Sun (2000)	Patent data at the provincial-level from 1985 to 1995	Output and employment of state-owned and collective enterprises were found to be an important force in innovation output and overall the relative level of provincial development seeming to drive the empirical results.
Cheung & Lin (2004)	Patent data at the provincial-level from 1995 to 2000	The presence of FDI has a positive impact on patenting by domestic innovators, with R&D inputs also positive and significant but export volumes insignificant.
Yueh (2009)	Patent data at the provincial-level from 1991 to 2003	The R&D personnel is found to be a significant determinants of patents. While per capita GDP increases the propensity to innovate across all regions, notable heterogeneity exists.
Li (2012)	Patent data at provincial level	From the institutional perspective, this study proposes that patent subsidy programs implemented by each provincial region have played an important role in the growth of Chinese patenting.
Hu (2010)	Patent data at the industry level during 1995-2004	Hu finds machinery, chemicals, and telecommunications equipment industries to have by far the largest number of patents in China. Patenting by foreign residents in China is suggested to be driven by import competition, that is, foreign patenting is positively correlated with the amount imported by China from technologically similar industries in other countries.
Hu & Jefferson (2009)	Aggregate patenting data in SIPO during 1995-2001	Recent increase in firms' patenting activity in China is because of the presence of FDI, the change in the patent law and the anticipation of China's WTO accession in 2001.

Zhang & Chen (2012)	Aggregate patenting renewal data in SIPO	Patents requested by domestic applicants have a lower value than those requested by foreign applicants. Chinese firms may patent under local policy demand rather than market competition.
Eberhardt, Helmers, & Yu (2011)	A firm-level dataset by matching USPTO and SIPO patents to Chinese manufacturing census data for 1999-2006	The patent explosion is accounted for by a tiny, highly select group of Chinese companies in the ICT equipment industry. Firms patenting in both US and China are younger, larger and more export-oriented than firms patenting exclusively in China.
Dang & Motohashi (2015)	A merged dataset of Chinese patent data and industrial survey data from 1999 to 2008	The patent count is correlated with R&D input and financial output, which suggests that patent statistics are meaningful indicators. Patent subsidy programs increase patent counts more than 30%.
Jia, Huang, & Zhang (2015)	A firm-level dataset by matching SIPO patents for Chinese listed SOEs from 2001 to 2009	After implementation of pro-innovation public policies, the Chinese SOEs in which agency problems are more severe have a higher rate of producing patents in general---but a lower rate of producing patents that are deemed novel---than before the implementation of the policies and than the SOEs in which agency problems are less severe.
Anderson, Sutherland, & Severe (2015)	A firm-level dataset by matching SIPO patents to Chinese firms acquisition in developed markets	Domestic market patent of Chinese MNEs rises significantly in the wake of acquisitions, while those of the acquired target do not significantly change.

CHAPTER THREE: AN INTRODUCTION OF THE EMPIRICAL CONTEXT

3.1 A brief description of Chinese firms' outward FDI

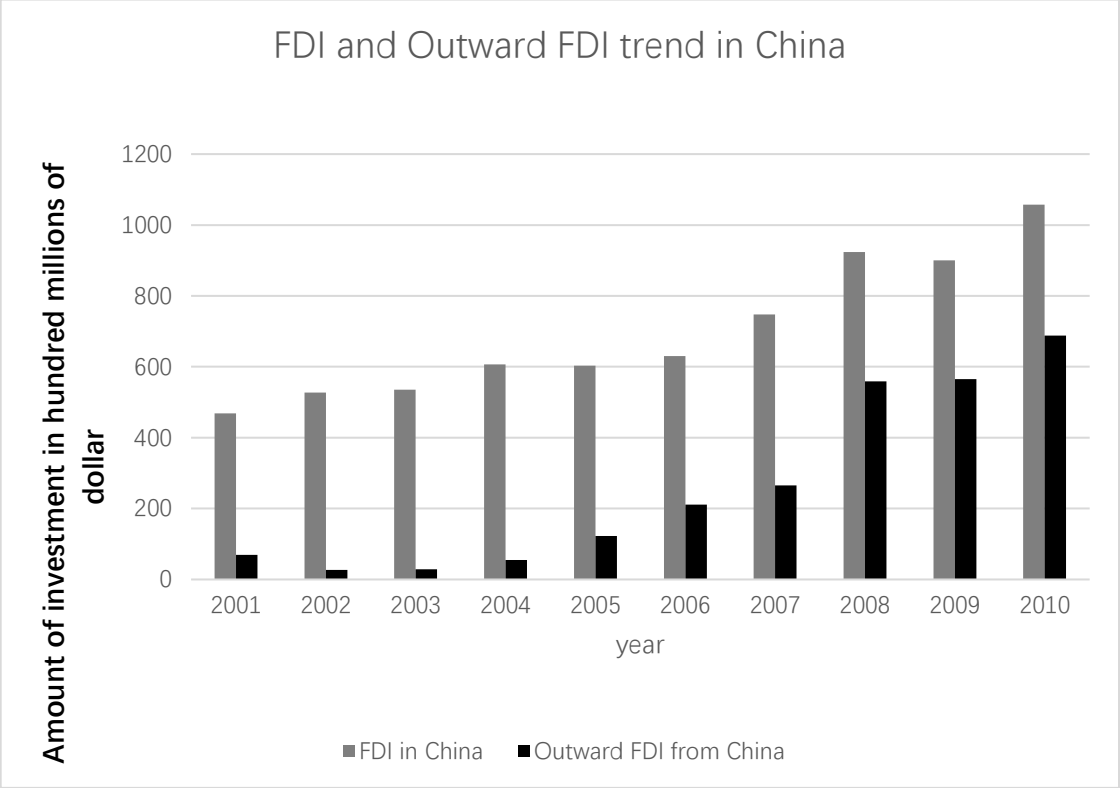
China is an appropriate empirical setting to test this dissertation framework. Since the early 2000s, Chinese firms have begun to 'go global' as the government formally initiated the "Going abroad" policy (Buckley et al., 2007b). It provided strong, national public endorsement for an institutional environment that fosters OFDI. Based on this principal strategy, a series of regulations were announced in the several years following 2000 and complex regulation repertories were constructed. The Chinese government also completed the transformation from a regulator to guide; that is from a regime that directly intervenes in business decisions and commands business outcomes to a state which influences and directs the market through rules and a broad set of administrative bodies (Bach, Newman, & Weber, 2006). The Chinese government use this 'go abroad' strategy to serve two important objectives. First, the government believes that engaging in OFDI is one of the most efficient ways to gain foreign knowledge and hence help increase the productivity and competitiveness of Chinese firms ((Buckley et al., 2007b; Deng, 2009). Second, having its firms engaged in the international market helps China increase its economic and political influence internationally (Morck et al., 2008; Wang et al., 2012a).

Actually, following the launch of China's 'go global' policy in 1999, Chinese outward direct investment grows sharply since 2002. Nowadays, China is the country with largest FDI inflow and outflow among the emerging economies. Figure 2 shows the development trend of FDI in China and outward FDI from China in past decade. In recent years, Chinese companies made some megadeals in developed markets. For example, CNOOC made a $15 billion acquisition of Nexen in Canada, and Shuanghui

acquired the U.S. Company Smithfield at a $5 billion deal, which are the largest overseas deals undertaken by Chinese firms in oil and food industries respectively. The consulting firms predict that outflows of Chinese FDI to both developed and developing countries are expected to grow further (UNCTAD, 2013).

The sample for this study consists of publicly listed Chinese firms in the manufacturing sector and their FDIs from 2002 to 2010. Table 3 shows the no. of projects in each year by listed firms in manufacturing industries. The table 3 shows that Chinese firms have a more foreign market investment in recent years; investments last three years' account for 43 percent of total investments. Table 4 shows the distribution of entry modes in each year by listed firms. From this table, it seems that Chinese listed firms have a preference for greenfield investment to acquisitions. Three-quarters of projects are set up by greenfield entry mode. Table 5 lists the top ten destinations for Chinese manufacturing listed firms' foreign investments. It shows that developed countries are the top selection for Chinese MNEs. Table 6 shows foreign investments by listed firms' two-digit industries. From this table, it seems that the top five manufacturing industries that more active in overseas equity investments are the computer, communication and other electronical equipment, pharmaceutical manufacturing, raw chemical materials and chemical products, special equipment manufacturing, and general equipment manufacturing.

Figure 2: FDI in China and OFDI from China



Data Source: 2010 Statistical Bulletin of China's Outward Foreign Direct Investment

Table 3: Number of foreign market investments by year

Year	Number of investments	Percentage
2002	26	3.40
2003	74	9.69
2004	54	7.07
2005	76	9.95
2006	91	11.91
2007	108	14.14
2008	130	17.02
2009	104	13.61
2010	101	13.22
Total	764	100

Table 4: Distribution of foreign investment projects by entry mode per year

Year	Greenfield	Acquisition	Total
2002	25	1	26
2003	71	3	74
2004	48	6	54
2005	49	27	76
2006	88	3	91
2007	68	40	108
2008	95	35	130
2009	66	38	104
2010	64	37	101
Total	574	190	764

Table 5: Top 10 destinations for foreign market investments

	Destination	Number of investments
1	Hong Kong	209
2	United States	96
3	United Kingdom	41
4	Germany	30
5	Australia	30
6	Netherlands	26
7	Singapore	25
8	Japan	22
9	Canada	20
10	Vietnam	15

Table 6: Number of foreign market investments by parent firms' industry

Industry name	Number	Percent	Industry name	Number	Percent
Farm products processing	10	2.89	Chemical fiber manufacturing	5	1.45
Food manufacturing	6	1.73	Rubber and plastic product industry	7	2.02
Wine, drinks and refined tea manufacturing	6	1.73	Non-metallic mineral products	14	4.05
Textile	16	1.45	Smelting and pressing of ferrous metals	14	4.05
Textiles, garments and apparel industry	5	1.45	Smelting and pressing of nonferrous metals	19	5.49
Leather, fur, feathers, and related products	2	0.58	Metal products	7	2.02
Timber processing	1	0.29	General equipment manufacturing	22	6.36
Furniture manufacturing	3	0.87	Special equipment manufacturing	32	9.25
Papermaking and paper products	8	2.31	Automobile manufacturing	20	5.78
Printing and reproduction of recorded media	2	0.58	Instrument and meter manufacturing	2	0.58
Culture and education, arts and crafts, sports and entertainment products manufacturing	1	0.29	Railway, shipbuilding, aerospace and other transportation equipment manufacturing	10	2.89
Petroleum processing, and nuclear fuel processing	1	0.29	Computer, communication, and other electronical equipment	61	17.63
Raw chemical materials and chemical products	32	9.25	Other manufacturing	3	0.87
Pharmaceutical manufacturing	36	10.4	Total	346	100

3.2 A brief description of Chinese patent information

3.2.1 The Chinese patent system

China's first patent law came into force in 1985. The patent law in China was reinstituted with similar features to those of Europe and Japan rather than the U.S. Since then, China's patent law was amended three times (in 1992, 2001, and 2009). The second comprehensive amendment of the patent law, adopted on 25th August 2000 and effective from 1st July 2001, was necessary to bring China's patent law in line with the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which China adopted with WTO entry in November 2001.

China's State Intellectual Property Office (SIPO) grants three types of patents: invention, utility model, and design patents. According to the SIPO, while invention patent applications receive a substantive examination by patent examiners for novelty, inventive steps, and practical applicability before grant, utility model, and design patent applications are granted on a registration basis without substantive examination and thus represent small and incremental innovations. Compared with invention patents, utility model and design patents also have a shorter protection period (a term of 10 years compared with 20 years for invention patents), and are less expensive (lower application, attorney, and renewal fees, and no examination fees), and are more quickly granted (0.5-1 year grant lags compared with 2-3 years for invention patents). Because of these differences, I focus on invention patents in this paper to better capture firms' innovative capability and quality of their innovation. Here, the SIPO invention patents correspond to USPTO 'utility' patents.

3.2.2 Basic features of Chinese patents and database

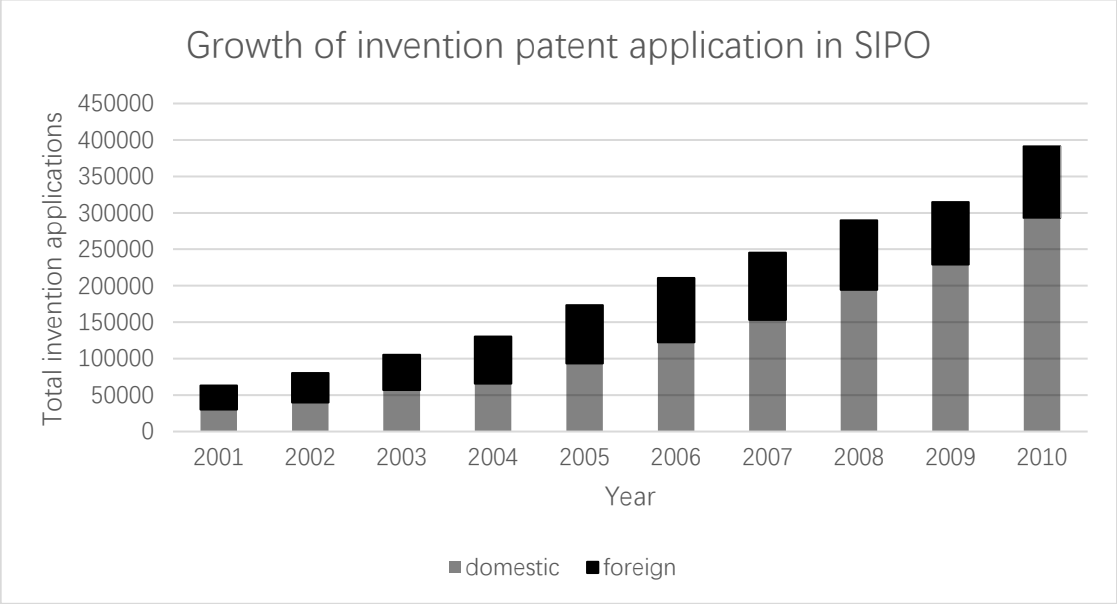
Like patents of other countries, Chinese patents provide standardized, fine-grained

information on the innovation concerned, including technical descriptions, the assignee(s), the inventor(s), the time (application and grant dates), the location (assignee address, but not inventor address), the technological domain to which it belongs (technology classes), the scope of property rights (claims), and so forth. One limitation is that citations data do not exist because the SIPO does not have consistent requirements for including citations to past patents or non-patent documents as prior art. This limitation can be partially remedied by using the number of unique IPC classes assigned, which can serve as an indicator of patent value.

As shown in Figure 3, China has experienced a sustained, strong growth in patent filings in the past decades. For instance, applications for invention patents, the type of patent that is most comparable across countries, to the SIPO increased from 63204 in 2001 to 391177 in 2010 beating Japan to become the second-largest patenting filing country. However, patent data do not come with firm identifiers that can be used to link to other firm-level data sources, presenting a challenge to researchers, policy makers, and business managers who seek to understand the firm-level underpinnings of innovation. He, Tong, He, Zhang, and Lu (2013) developed a patent database of Chinese listed companies based on the patent filed with China's SIPO, to complement prior matching projects that mostly focused on firms in developed economies, notably the U.S. and Europe.

In this dissertation, by matching the patent data in SIPO with Chinese firms listed on the mainboard of Shanghai and Shenzhen Exchange, and narrowing focus on manufacturing firms, the final sample in essay 2 consists of 638 firms from 2002 to 2010. Table 7 shows the top 10 listed firms filing invention patents in SIPO in the period.

Figure 3: Growth of invention patent application in SIPO (2002-2010)



Data source: Chinese patent data from SIPO website

Table 7: Summary statistics of top 10 listed firms filing with SIPO between 2002 and 2010

Stock code	**Company name**	**Listed year**	**Industry name (two-digit)**	**Industry code (three-digit)**	**Patent filed**	**OFDI projects**	**OFDI registered amount (in million)**
000063	ZTE	1997	Computer, communication and other electronical equipment	392	21541	52	383
600019	Baoshan Iron & Steel	2000	Smelting and pressing of ferrous metals	312	1487	8	277
000016	Konka Group	1992	Computer, communication, and other electronical equipment	395	957	8	46.2
600535	Tianjin TASLY	2002	Pharmaceutical manufacturing	274	618	2	6.11
600839	Changhong	1994	Computer, communication and other electronical equipment	395	519	6	73.1
601600	Aluminum Corp.	2007	Smelting and pressing of nonferrous metals	321	506	5	298
000625	Chongqing Changan	1997	Automobile manufacturing	361	474	2	2.02
000898	Angang Steel	1997	Smelting and pressing of ferrous metals	312	422	0	0
000039	CIMC	1994	Metal products	333	347	57	4060
600060	Qingdao Hisense	1997	Computer, communication, and other electronical equipment	395	343	2	33.2

CHAPTER FOUR: PERFORMANCE ASPIRATION, FOREIGN COMPETITION, AND CHINESE FIRMS' OUTWARD FDI

4.1 Introduction

As outward FDI from emerging economies (EE) especially China has increased substantially in recent years, a more thorough understanding of this phenomenon of Chinese MNEs can help to advance the existing MNE theories further (Luo & Tung, 2007). Previous theoretical studies highlight that a primary difference between Chinese MNEs and MNEs from developed economies is that they are driven by different motivations (Mathews, 2006; Witt & Lewin, 2007). Lu et al. (2010) and Wang et al. (2012a) developed a framework from the strategy tripod perspective by incorporating the direct effect of firms' resources, institutional environments, and industry dynamics on outward FDI by Chinese MNEs. However, I propose that a theory of OFDI must include the factors that motivate decision makers to pursue major changes in corporate activities. Specifically, to address the determinant of OFDI, it is necessary to understand the perspective of managers situated within firms and what motivates them to initiate a search that eventuates in OFDI.

Attention to aspiration and their effect on organizational change are the key component in the behavioral theory of the firm (Argote & Greve, 2007; Cyert & March, 1963; Gavetti, Levinthal, & Ocasio, 2007; March & Shapira, 1987; March & Shapira, 1992; Ocasio, 1997). A cornerstone of the theory is a model in which firms set their aspiration levels to reflect organizational goals, which then serve as a benchmark for assessing observed performance (Cyert & March, 1963). These aspiration levels facilitate the interpretation of prior performance, which, in turn, influences the probability of organizational change by modifying managerial risk preferences and

search behavior. Based on literature review in Chapter 2, previous studies use behavioral theory of the firm to explain if firms would form non-local ties (Baum et al., 2005a), to engage in R&D investment (Chen et al., 2007; Chen, 2008; Chen & Miller, 2007; Greve, 2003a; Nohria & Gulati, 1996), to select partners of equal or different status (Shipilov et al., 2011), to carry out acquisitions (Iyer & Miller, 2008; Kim et al., 2015), and to introduce new production (Gaba & Joseph, 2013; Tyler & Caner, 2016). Despite the extensive research, few scholars have used the behavioral theory of the firm to explain a firm's high-risk internationalization decisions especially for firms from emerging market. Internationalization has the potential to transform organizations and increase firms' competitive advantages. Accordingly, the behavioral theory of the firm appears well suited to specifying the conditions under which decision-makers are likely to take OFDI.

Cyert and March (1963) highlight two key stimuli for search---problems and slack. Problemistic search is an effort to identify alternatives to current activities that resolve performance shortfalls. Slack search occurs when firms possess excess resources that allow for experimentation, which help firms to identify and pursue new opportunities (Levinthal & March, 1981). By analyzing the effects of performance relative to aspiration levels on Chinese firms' OFDI, this study attempts to provide a behavioral explanation for OFDI decisions and investigate the role of foreign competitions in the domestic market.

4.2 Theory and Hypotheses

4.2.1 Performance below aspiration level

Organizations respond to low performance by making a broad range of strategic and operational changes, including entering new market niches, acquiring resources, and

increasing R&D and innovativeness (Audia & Greve, 2006; Audia et al., 2000; Greve, 1998, 2003a; Hambrick & D'Aveni, 1988; Lant et al., 1992). Although search theorists have argued that organizations respond to low performance by making changes, others have suggested that organizations are inert owing to constraints from internal politics and external commitments (Hannan & Freeman, 1977), commitment to failing courses of action (McNamara, Moon, & Bromiley, 2002; Staw, Sandelands, & Dutton, 1981), and perceptual biases (Milliken & Lant, 1991). In other words, performance below aspiration level triggers both efforts to change an organization and efforts to prevent such change (Greve, 1998).

However, I would like to propose that even though performance far below aspirations is an engine for problem-driven search, the resource availability might constrain their motivation. The behavioral theory of the firm did not consider the resource availability and capability for the firm under the situation that performs far below aspiration levels. The implicit assumption in prior research that firms have enough resources to undertake organizational change, even though their performance far below the aspiration level, should be released, especially for firms from emerging economies. Audia and Greve (2006) argued that a firm's stock of resources influences the position of the survival point. The buffering effect of a large stock of resources lowers the performance level at which the organization's survival is in danger. Accordingly, as OFDI is a high uncertain investment and needs lots of resources, the resource constraints might be more salient when I analyze the OFDI decisions. In other words, an inability to generate and consider alternatives makes decision makers rigid.

From another perspective, below aspiration performers may engage in domestic investment directly toward improving the performance of existing businesses in the home market rather than turn to the search of internationalization with limited resource.

Organizations always search for solutions in the proximity of the perceived problem. In other words, outward FDI may not be the solution matched with a performance problem. Accordingly, problemistic search triggered by the performance below aspirations may not result in changes in the corporate portfolio through outward FDI. Iyer and Miller (2008) proposed that the problemistic search argument needs to be modified for corporate changes in strategy such as internationalization. Managers of organizations with low performance may change them in ways other than internationalization, such as downsizing, productivity improvement, or diversification (Ahmadjian & Robinson, 2001; Anand & Singh, 1997). Thus, the link between an organizational problem and foreign expansion is obscured by noise generated by alternate sources of solutions.

Based on attention-based theory, decision makers will be selective in the issues and answers they attend to at any one time, and what decision makers do depend on what issues and answers they focus their attention on. Meanwhile, solutions compete for the attention of managers (Ocasio, 1997), so it is not guaranteed that the outward FDI will be the solution matched with a performance problem especially for below-aspiration performers with resource constraint. Because search is oriented toward an expedient solution to the problem, the most immediate results, then, is an incremental adjustment of practices through to be causally related to the problem.

Accordingly, these arguments emphasize different processes underlying decision making---an inability to generate higher uncertain alternatives and a desire to pursue domestic investment they familiar with. Hence, problemistic search triggered by the performance below aspirations may not result in changes in the corporate portfolio through outward FDI.

Hypothesis 1a: As firms' performance falls below the aspiration level, the extent of firms' outward FDI decreases.

4.2.2 Performance above aspiration level

Achieving a performance exceeding aspirations is the way in which slack accumulates (Levinthal & March, 1981). Slack search is most likely to appear in firms that have persistent positive attainment discrepancies. The slack-driven search prediction stems from the idea that performance above aspirations leads to experimentation and organizational change because success provides managers with access to additional or lower-cost resources and instills confidence in their abilities to pursue promising ideas (Antonelli, 1989; Cyert & March, 1963; Garud & Nayyar, 1994; Lant et al., 1992; Nohria & Gulati, 1996; Singh, 1986).

It is often suggested that increased organizational resources allow experimentation and organizational change (Cyert & March, 1963; March, 1981). Organizations that perform above their aspiration levels have greater opportunities for experimentation and less strict performance monitoring and so have the resources and managerial patience needed to expand abroad. High-level managers can formalize slack search by allocating amounts of time and resources to work on foreign expansion and applying loose performance standards for new investments (Jelinek & Schoonhoven, 1990). In contrast, strict performance monitoring for lower performers can cause new foreign activities to be aborted before an organization has accumulated enough experience to know whether they will eventually improve its performance.

Pitelis (2007) argue that slack resources of a firm are critical in explaining the strategy of the firm. The presence of abundant slack resources may induce firms to take on more risk, and hence, the slack resources may be used to engage in OFDI. In the behavioral view, the presence of slack resources enables firms to increase search, which generates opportunities for change (Cyert & March, 1963; Levinthal & March, 1981). By extension, slack can facilitate search resulting in major changes in strategy, as when

firms undertake OFDI. The availability of slack resources makes foreign expansion feasible and buffers the risk associated with a firm's OFDI. Cheng and Kesner (1997) point out that the possession of slack resources in deed affects firm behaviors, and more importantly the thinking behind strategic actions. Therefore, when slack resources are available, decision makers are more confident to emphasize the development of their strategies.

Although some types of high performance may not create slack resources (Greve, 2003a), most lower the cost of acquiring them (Aldrich & Auster, 1986). Even without freer resources, greater risk taking may occur as a result of decision makers' heightened beliefs in their infallibility and because the downside of failure is mitigated by the large buffer between current performance and aspirations (March & Shapira, 1992; Miller, 1990). Slack driven search may increase the tendency for decision makers to initiate risky OFDI in the hope of even greater gain.

Accordingly, I propose that firms' response to positive performance gap conform to the slack search argument. The positive performance gap motivates loosening controls and greater experimentation, so the extent of outward FDI should increase.

Hypothesis 1b: As firms' performance increases above the aspiration level, the extent of firms' outward FDI increases.

4.2.3 Foreign competitions in domestic markets

Previous studies in developed countries propose that the foreign competition in a firm's main business is likely to influence a firm's international strategy. Foreign competition is more likely to increase competitive rivalry since foreign-based firms can possess both country and firm-specific capabilities that differ substantially from those of domestic firms. Numerous industry-level studies document the significant economic and

competitive ramifications of increased foreign competition in a country's domestic markets (Caves, 1974; Driffield & Munday, 2000). First, increased competition from foreign firms may bring about changes in the rate of technological developments in an industry (Scherer & Huh, 1992) and as a result, may lead to greater pressure to increase efficiency to remain competitive (Driffield & Munday, 2000). Second, increased foreign competition in a firm's domestic market may also decrease industry profit margins (Ghosal, 2002). Third, competition from foreign firms introduces diverse and less familiar capabilities into an industry and can create a more uncertain competitive environment (Ghoshal, 1987). All the evidence prove that foreign competition in a firm's domestic market may significantly intensify competition at the industry level (Tybout, 2001).

From foreign firms' perspective, FDI means a lock into a new competitive arena for them. Failure in foreign markets means the loss of sunk costs and substantial new costs associated with exit barriers (Brouthers & Hennart, 2007). Foreign competitors will commit significant resources to such ventures only if they are confident that the enterprise will succeed. FDI market entry indicates a credible risk to local firms and domestic market power was not a sufficiently effective deterrent. As the competitor become more established, incumbent capability weakens. The incumbent no longer has exclusive access to local inputs, and the distance liability gap narrows. At the same time, the competitor became more committed and entrenched through local investment. Intensified competitive rivalry makes the industry less attractive regarding local output markets.

However, for the vast majority of firms in China, their domestic market is the most significant regarding sales and operations (Rugman & Verbeke, 2004). Domestic firms allocate resources to their home market business portfolio and are highly committed to

protecting their investment. They would like to defend domestic market power and market share. Competitive aggressiveness has been shown to improve the chances of a firm maintaining or improving its market position (Ferrier, Fhionnlaoich, Smith, & Grimm, 2002). The studies by Wiersema and Bowen (2008) suggest a pattern, which is in line with what has been labeled a 'global focusing' strategy, where firms respond to increased competition by expanding their international diversification to take advantage of the ability to leverage resources cross-nationally (Meyer, 2006). The findings of Hutzschenreuter and Grone (2009) is in line with Rumelt's classic 'escape hypothesis' (Rumelt, 1991; Rumelt, 1974), which argue that firms may invest abroad to avoid the challenges imposed by foreign competitors in their home market and access alternative sources of resources to balance their portfolio.

Thus, exposure to foreign competition in the home market increases firms' motivation to seek opportunities overseas.

Hypothesis 2: As the level of foreign competition in home markets increases, the extent of firms' outward FDI increases.

4.2.4 Moderating effect of foreign competition

To extend the model of decision making to a competitive context and develop the theory about how foreign competition in domestic markets affects firms' decision making, I build on the concept of bounded rationality, a fundamental concept in the behavioral theory of the firm (Cyert & March, 1963). March (1997) suggested that when rationality is bounded, decision makers adopt alternative logics to guide choice. These logics also define what is appropriate and what directs actors' attention to specific features of a situation.

As I proposed previously, firms performing below their aspiration levels may be

resource constraint and decrease their extent of OFDI as their performance decrease. However, these arguments assume firms have the same reaction when they fail to reach their aspiration levels. This assumption overlooks the contingency impact of foreign competition on their resource allocation and focus of attention.

On the one hand, as the target for problemistic search is to solve performance problems, organizations usually search for solutions in the proximity of the perceived problem by making the incremental adjustment of practices related to the problem. However, the theory also specifies that organizational search is made wider when initial solutions are not seen to work. Consistent with this view, organizations with performance below aspiration levels have been shown to engage in major initiatives, sometimes after first trying out smaller changes (Grinyer & McKiernan, 1990). As foreign rivalry decrease industry profit margins, increase pressures for great efficiency and technological developments (Tybout, 2001), they make the situation even worse for firms performing below aspiration levels. In this situation, intense foreign competition reduces their investment efficiency when they target to solve their performance problems through domestic investment. As a result, firms performing below aspiration levels will seek to balance their situation by developing international diversification opportunities, thereby reducing their vulnerability to the "attacks" by highly-committed competitors who can replicate any location advantages they might possess (Hutzschenreuter & Grone, 2009). In other words, increased foreign competition in a firm's existing businesses will motivate firms performing below aspirations to take the foreign investment to change their situation compared to the firms in industries with a lower level of competition. With limited resources, these firms may relocate their resources to markets with higher profitability and investment efficiency, and expand their geographic scope to explore potential new sources of competitive advantage in

low-cost offshore markets that strengthen their competitive capabilities at home, adding a more diverse set of locations to their geographic footprint (Almor, Hashai, & Hirsch, 2006; Dunning, 1988; Rugman & Verbeke, 2001).

On the other hand, following attention-based view, the principle of situated attention indicates that what decision makers focus on, and what they do, depends on the particular context they are located in (Ocasio, 1997). In other words, organizational attention is affected by the particular context or situation they find themselves in. Conceptually, organizations receive issues from the environment, feeds to decision makers, and retrieves candidate answers from the environment (Vissa, Greve, & Chen, 2010). In this case, organizations may draw on the experience of foreign firms when selecting the responses to a given problem when they are in industries with the higher foreign competition. In other words, firms in industries with intense foreign competition may imitate foreign competitors' behavior and look for solutions in foreign markets. Accordingly, these firms will be more likely to do the problemistic search to undertake outward FDI.

Hypothesis 3a: As firms' performance falls below the aspiration level, the extent of firms' outward FDI decreases less when there is higher foreign competition in home markets.

March and Olsen (2006) argued that a decision maker following the logic of appropriateness makes decisions based mainly on the congruence between role expectations and an action, rather than on conscious calculations of costs and benefits. It is socially important for the higher performers to maintain their lead or to win the position at the top of a competitive hierarchy. An expectation regarding maintaining the lead position is likely to induce the higher performing firms to take greater risks than would be prescribed by rational utility maximization. Boyle and Shapira (2012) referred

to this phenomenon as the liability of leading. Based on the empirical setting of Jeopardy! Tournament of Champions, Boyle and Shapira (2012) argued that leaders are prone to take unnecessary risks to maintain their leadership position in a competition. For many firms, sustaining industry leadership is a key organizational goal (Geroski & Toker, 1996; Kato & Honjo, 2006; Simon, Bilstein, & Luby, 2006).

With slack resources, firms performing above aspiration levels are more likely to take OFDI as their performance relative to aspiration increases. Moreover, to keep their high status in the home market, exposure to foreign competition in the home market also increases firms' motivation to take risky investment such as seeking strategic assets overseas. These firms observed that they could not win against global leaders by passively protecting their current competitive edge, they perceive greater incentives to explore complementary strategic assets overseas proactively to keep their competitive position better. The most motivated firms are usually those with the highest possibility to succeed backed by prior successful experience. Accordingly, I expect that for firms performing above aspiration levels, the uniqueness of their position, the narrowing of attention, and the fulfillment of social expectations contribute to their taking excessive risks to maintain their position at the top of the competition.

Hypothesis 3b: As firms' performance increases above the aspiration level, the extent of firms' outward FDI increases more when there is higher foreign competition in home markets.

4.3 Methods

4.3.1 Sample and data source

I compile the dataset from several sources. First, I obtained the basic information and financial data on listed firms from the China Stock Market and Accounting Research

(CSMAR) database, which is considered a reliable database. I exclude firms in the service sector as service firms are different from manufacturing firms in their financial structures and ways of measuring their performance (Lien, Piesse, Strange, & Filatotchev, 2005). As a result, the sample consists of 832 firms across 27 two-digit industries and 112 three-digit industries. Next, I manually collect information on overseas subsidiaries from listed firms' annual reports for 2002-2010. I choose 2002 as the starting year because FDI from China surged after China's access to the WTO in 2001 (MOFCOM, 2009). I define a subsidiary as any entity where the listed firm holds at least 20% of the equity. In annual reports required by Chinese authority, 20% of equity is the threshold of disclosure of subsidiaries. I identify the establishment of an overseas subsidiary by comparing full subsidiary lists of a given firm for consecutive years. If an overseas subsidiary appeared in firm i's annual report of year t but not in that of year t-1, I further check the annual report and other documents about the firm for year t to confirm the establishment year for the subsidiary. Finally, there are 346 firms setting up 764 foreign subsidiaries in 76 countries in 2002-2010.

Then, I calculate the average return on assets (ROA) and sales growth of all the firms in the industries based on the Annual Industrial Survey Database compiled by the Chinese National Bureau of Statics (NBS). The Survey Database covers industrial firms of all types of ownership in China and has been widely used in prior research (Buckley, Wang, & Clegg, 2007c; Chang & Xu, 2008). By law, all firms including foreign firms, with annual sales of at least 5 million RMB (or roughly $760,000 based on the exchange rate in 2009) in the year before the survey in China are required to cooperate with the survey and submit financial information. Also, foreign competition levels were measured based on these data as the Survey database covers information on foreign firms in China. I used China's three-digit industry classification code to define

the industry.

I obtain the industry-level data from the WIND database, a database that is widely regarded as one of the most comprehensive and authoritative data sources in China (Peng, Sun, & Tan, 2008), and China Statistical Yearbook on Science and Technology. I use one-year lag for all the explanatory variables to avoid possible endogeneity with the dependent variable.

4.3.2 Dependent variable

OFDI is an equity investment in foreign countries outside a firm's home country, resulting in the setting up of a foreign subsidiary in a host country (Delios & Beamish, 1999). Following previous literature, I measure international expansion as the count of foreign subsidiaries established by a firm per year. It is a flow rather than a stock measure of foreign subsidiaries.

4.3.3 Independent and moderating variables

Performance relative to aspirations. The performance feedback simplifying rule focuses on performance relative to aspirations---that is, the extent to which a focal firm's performance is greater or lower than its aspiration level (Greve, 2003a). Aspiration formation can draw on historical and social performance criteria (Cyert & March, 1963; Greve, 1998). Theoretical and empirical studies have supported the contention that aspiration levels in organizations are functions of previous aspirations and feedback about actual performance (Lant, 1992; Lant et al., 1992; Lant & Montgomery, 1987; Mezias et al., 2002). Following previous studies (Chen, 2008; Greve, 2003a; Iyer & Miller, 2008) I use ROA at time t-1 as the performance measure because ROA captures a firm's effectiveness in a broad manner. Following Cyert and

March (1963), I computed aspiration level (A) as a mixture of social and historical aspiration levels. The social aspiration level (SA) is the average of other firms' performance (P), calculated as the mean ROA of all firms in the same three-digit industry. The historical aspiration (HA) level is a mixture of past-period historical aspiration level and the previous performance of the focal firm. Letting α_1 and α_2 be weights, the formulas are:

$$Ati= \alpha_1 SA_{ti} + (1- \alpha_1) HA_{ti}$$

$$SA_{ti}=\sum P_{tj} /\text{no. of firms in the industry}$$

$$HA_{ti}= \alpha_2 P_{t-1} + (1- \alpha_2) HA_{t-1,\, i}$$

Here, t is time, and i and j indicate firm. I estimated the weights by searching all parameter values by increments of 0.1 and taking the combination giving the highest model "log-likelihood". This procedure yielded a value of 0.9 for α_1 and a value of 0.1 for α_2. To distinguish between the situations where performance above and below a firm's aspiration level, I specified performance as a spline function (Greene, 2003) of firm performance relative to their aspiration level, with a knot at 0: *performance-aspiration>0* for the cases where performance is above the aspiration level, and *performance-aspiration<0* for cases where performance is below the aspiration level. To better understanding, I take the **absolute value** of performance-aspiration<0 in the analysis.

Foreign competition. To measure the foreign competition in the domestic market, I examine the FDI activities undertaken by all foreign firms in a particular industry in which the firm compete. Previous work has used several variables to reflect foreign firms' competition in the industry. For instance, Aitken and Harrison (1999) used the employment-weighted percentage of equity owned by foreign firms. Javorcik (2004) measured foreign competition as the share of firm's total equity owned by foreign

investors. Most studies, however, have used foreign employment shares (Buckley et al., 2002; Caves, 1974; Driffield & Munday, 2000; Liu, Siler, Wang, & Wei, 2000). I used the number of employees in all foreign-owned enterprises (FOEs) divided by the number of employees in all enterprises in an industry to measure the foreign competition. In robustness check, I also used assets of FOEs divided by the total assets of all enterprises in the industry, and revenue of FOEs divided by the total revenue of all enterprises in the industry to measure the foreign competition.

To examine the interaction between firm performance and foreign competition, I normalized foreign competition between 0 and 1 using the lowest and highest values in the data. Thus, the industry with highest foreign competition (computer manufacturing) had a score of 1, and the smallest had a value of 0. This simplifies the interpretation of the coefficients in Table 2 for the minimum and maximum values in the data. The effect for the firms in industries with lowest foreign competition in the data is the main effect of performance relative to aspirations, and the effect for firms in industries with highest foreign competition in the data is the sum of the main effect of firm performance and the interaction effect between firm performance and foreign competition. The effects for all other firms fall in between. This approach is mathematically equivalent to the alternative approach of taking the interactions as deviations from the mean but is easier to interpret when testing hypotheses that contrast the extremes (Audia & Greve, 2006).

4.3.4 Control variables

I included several firm-level time-varying control variables that may also influence a firm's OFDI activities: firm size, age, product diversification, intangible assets, slack resources, state ownership, central government ownership, board of director's political connection and international experience, international joint venture (IJV) experience,

previous foreign experience, domestic investment and distance to bankruptcy. I controlled for *firm size* which is measured by the logarithm of a firm's total assets since larger firms typically have more slack resources for internationalization. *Firm age* was controlled for as a proxy for experience and resources.

Hitt et al. (1997) found that *product diversification* influences a firms' degree of internationalization. To control for its possible effect, I include this variable, measured by Entropy index approach which is conventionally applied to calculate diversification and takes into account the number of industries the firms participates in, the proportion of sales from each industrial sector. Accordingly, product diversification is measured as $\sum p_i * \ln (1/P_i)$, where Pi is the proportion of sales in industry i. I also included the logarithm of intangible assets to control for the impact of firms' *intangible assets* on internationalization. According to the Chinese accounting standards, intangible assets are defined as long-term non-monetary assets without physical forms held by enterprises, including patents, non-patent technology, trademarks, copyrights, land use rights and concessions. To control for the effect of *slack resources*, following the classification by Bourgeois and Singh (1983) and Bromiley (1991), I used *current ratio* (current assets divided by current liabilities), which measure the liquid resources uncommitted to liabilities, to represent available slack, *working capital-to-sales ratio*, which captures absorption of slack related to capital utilization to measure recoverable slack, and *equity-to-debt ratio*, which reflects the ability of further borrowing to proxy potential slack. I standardized these three proxies and summed them up to obtain a general *slack index*.

Following previous literature, I adopted a three-step procedure to develop the measurement for *state ownership*. First, following prior studies (Delios, Wu, & Zhou, 2006), I captured the ownership type of a listed firm's largest ten shareholders. Second,

I coded the state ownership regarding the ratio of shares held by this shareholder if the shareholder's ownership type is an SOE; otherwise, its state ownership is coded as '0.' Third, I summed all the shareholders' proportion of SOE shares. Meanwhile, I also controlled for central government's effect on firm strategies by creating a dummy variable equaled to 1 if the firm is controlled by the central government. Except government ownership, political connections are also proved to be helpful for Chinese firms to acquire resources and to achieve better performance (Faccio, 2006; Li & Zhang, 2007). However, political connections are local-specific and always discourage firms from going abroad. In contrast, decision makers' international experience could be helpful for firms in overcoming difficulties in internationalization process (Levy, Schon, Taylor, & Boyacigiller, 2007). Thus, I controlled for the board of directors' (BOD) political connections and international experience in the analysis. *BOD's political connections* are measured as the percentage of a board of directors who were formerly government officers or members of the Chinese People's Congress (CPC) or the Chinese People's Political Consultative Conference (CPPCC). Similarly, *BOD's international experience* is measured as the percentage of the board of directors having foreign working or studying experience among the total number of board of directors.

For *IJV experience*, I developed a count measure to capture Chinese firms' involvement in IJVs established with foreign firms in the home country. To control for *firms' previous international experience*, which influences firms' further investment in foreign markets, I measured the number of OFDI projects by the firms accumulated to year t. I also included firms' *domestic investment*, which is measured by the logarithmic transformation of firms' total investment minus foreign investment. Finally, I controlled *Z-score* in the analysis as an indicator of how far a firm is from bankruptcy. A high Z-score indicates that a firm is not at risk of bankruptcy.

I also controlled several industry level variables. *Industry concentration* is measured based on the Annual Census data. Specifically, it is measured as one minus the Herfindahl index. The Herfindahl index equals the squared sum of sales percentages of firms in each three-digit industry. I rescale the industry competition proxy by multiplying it by 100 so that a high value reflects a highly competitive industry. Wiersema and Bowen (2008) argued that the ongoing globalization of markets and industries has fundamentally changed the competitive conditions facing firms, and is, therefore, likely to have a significant impact on firms' international expansion. I measured *industry globalization* by each industry's exports to its total sales. *Industry growth* was measured by the annual growth of sales in the industries. Moreover, given that consistent firm-level data on R&D intensity are not widely available in China, I use *industry R&D intensity* as a proxy. This variable is measured by the ratio of R&D expenditure to total sales of an industry in which a firm operates.

I used a set of year dummy variables to capture omitted variables that evolve over time. I also fixed the effects of sub-national regions by including dummy variables using two-digit area codes for provinces, autonomous regions, and centrally administered cities and the industry dummies to control for industry effects.

Table 8: Description and correlation (Essay 1)

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1.OFDI flow	0.10	0.67	1									
2.Performance below aspiration	0.06	0.19	-0.025	1								
3.Performance above aspiration	0.01	0.17	0.006	-0.023	1							
4.Foreign competition	0.27	0.22	0.083	0.025	0.012	1						
5.Firm size	21.35	1.10	0.181	-0.161	-0.059	-0.077	1					
6.Firm age	11.18	4.55	0.020	0.089	0.013	0.236	0.006	1				
7.Product diversification	0.27	0.39	0.003	0.008	-0.022	0.026	-0.002	0.084	1			
8.Intangible assets	16.23	4.69	0.056	-0.056	-0.021	0.073	0.185	0.190	0.113	1		
9.Slack resource	-0.1	2.32	-0.027	-0.091	0.024	0.055	-0.252	-0.057	-0.061	-0.097	1	
10.State ownership	0.28	0.27	-0.041	-0.058	-0.016	-0.202	0.188	-0.377	-0.108	-0.144	-0.048	1
11.Central government control	0.19	0.39	-0.019	-0.033	-0.012	0.053	0.130	-0.118	-0.001	-0.024	0.014	0.265
12.BOD's political connection	0.09	0.13	-0.010	0.022	-0.004	-0.051	-0.002	0.055	0.086	0.057	-0.038	-0.036
13.BOD's international experience	0.07	0.12	0.099	-0.015	-0.003	0.163	0.151	0.194	0.018	0.097	-0.025	-0.152
14.IJV experience	0.75	2.36	0.253	-0.028	-0.005	0.146	0.216	0.144	0.060	0.112	-0.065	-0.080
15.Previous foreign experience	1.14	8.07	0.236	0.001	-0.004	0.137	0.183	0.090	0.076	0.072	-0.039	-0.068
16.Domestic investment	16.30	4.52	0.057	-0.006	-0.007	-0.012	0.265	0.076	0.109	0.161	-0.123	0.086
17.Distance to bankruptcy	4.16	8.75	0.003	-0.337	0.073	0.010	-0.017	-0.014	-0.033	0.037	0.269	-0.047
18.Industry concentration	0.62	0.47	0.006	0.054	-0.014	-0.063	0.020	0.074	0.021	0.048	-0.005	-0.063
19.Industry globalization	0.22	0.28	0.068	0.004	0.003	0.161	-0.098	0.052	0.007	0.015	0.080	-0.031
20.Industry sales growth	22.25	10.39	0.027	-0.054	0.003	-0.118	0.048	-0.053	0.018	-0.029	-0.062	0.111
21.Industry R&D intensity	1.40	0.72	0.007	-0.025	0.015	0.131	-0.047	-0.036	-0.009	0.025	0.072	0.086
22.Economic growth	7.61	0.45	0.034	0.081	0.013	0.155	0.155	0.473	0.046	0.215	-0.028	-0.320

	11	12	13	14	15	16	17	18	19	20	21	22
11.Central government control	1											
12.BOD's political connection	-0.055	1										
13.BOD's international experience	-0.024	0.011	1									
14.IJV experience	-0.037	-0.036	0.183	1								
15.Previous foreign experience	-0.001	0.007	0.221	0.176	1							
16.Domestic investment	0.075	-0.012	-0.002	0.143	0.068	1						
17.Distance to bankruptcy	0.014	-0.056	0.024	-0.035	-0.015	-0.071	1					
18.Industry concentration	-0.055	0.060	0.042	-0.016	0.022	-0.005	-0.025	1				
19.Industry globalization	0.175	-0.056	0.099	0.101	0.098	0.008	0.007	-0.120	1			
20.Industry sales growth	0.015	0.043	0.017	-0.011	-0.042	0.017	-0.058	0.075	-0.044	1		
21.Industry R&D intensity	0.103	-0.038	0.022	-0.088	-0.005	0.028	-0.017	0.041	0.195	0.119	1	
22.Economic growth	-0.032	0.095	0.122	0.005	0.082	-0.075	0.062	0.247	-0.054	-0.093	-0.093	1

4.3.5 Model estimation

The use of count of foreign subsidiaries as the dependent variable proposes the use of a count model, such as a negative binomial (NB) or Poisson model. The NB model is more appropriate because the distribution of OFDI counts in our sample with a mean of 0.11 and a standard deviation of 0.67, indicates over dispersion and Poisson model requires the standard deviation of the dependent variables is closed to the mean (Greene, 2003). However, standard NB model cannot handle the presence of excess zero counts in OFDI data. In contrast, a zero-inflated negative binomial regression model (ZINB) may be a better estimation technique to deal with this problem. Following Greene (2003) recommendation to apply the Vuong test (Vuong, 1989), one can determine whether the ZINB model better describes the data than standard NB model. The Vuong Z-score in this study has a significant and positive value, confirming that the ZINB model is a better choice in analyzing OFDI decision in essay 1. Similarly, I use the AIC test to compare the negative binomial model with ZINB model. The results show that AIC favors the ZINB model.

4.4 Results

4.4.1 Hypotheses testing

Table 8 presents the descriptive statistics and a correlation matrix for all variables used in this study. Table 9 presents the zero-inflated negative binomial regressions for the effects of performance aspiration on OFDI activity. Model 1 is the baseline model including the control variables only. In Model 2 I tested Hypothesis 1a by entering the absolute value of performance-aspiration<0. Model 2 showed that the estimated coefficient of the performance below aspirations is negative and significant, fully supporting Hypothesis 1a. The estimates showed that the extent of outward FDI

decreased as performance fell below aspiration level. In Model 3 I tested Hypothesis 1b by entering a value of performance-aspiration>0. Model 3 showed that the estimated coefficient of performance above aspirations is positive and significant, fully supporting Hypothesis 1b. Firms performing above their aspiration levels showed an increase in OFDI activity as performance increases. Meanwhile, Model 3 shows that the coefficient of performance relative to aspiration level>0 is smaller than the absolute value of the coefficient of the performance below aspiration. An F-test (20.75, $p<0.001$) indicates that such a difference is significant, which means the influence of performance relative to aspirations on OFDI would be weaker for performance above rather than below aspirations. Figure 4 illustrates the reduced slope of the relationship between performances relative to aspiration and OFDI when performance is above aspiration level.

In Model 4, the results showed that the coefficient of foreign competition is positive and significant, which means that foreign competition has a direct influence on firms' OFDI. Thus, Hypothesis 2 is supported. To test the moderating effect of foreign competition, I put the interaction term of foreign competition with performance below and above aspiration separately in Model 5 and 6. The results in Model 5 showed that the interactive effect of foreign competition and performance below aspiration is positive and significant. Recall that the main effect equals the effect on firms in industries with lowest foreign competition in the sample, and the main effect plus the interaction equals the effect of the firms in industries with highest foreign competitions in the sample. The effects on the other firms are in-between. Performance below aspiration has a negative and significant estimate consistent with less OFDI taking in firms with low foreign competition, and the interaction of performance below aspiration and foreign competition has a positive and significant estimate consistent with more

OFDI taking in firms with the high foreign competition. In this model, I test whether the sum of the main effect and the interaction is significantly different from 0 with a Wald text. The sum of the coefficients is positive and significantly different from 0, showing that firms in industries with higher foreign competition increase their OFDI as performance decreases. These results are fully consistent with Hypothesis 3a. The interactive effect of foreign competition and performance above aspiration is not significant. Thus, Hypothesis 3b is not supported. I put the two interactions together in Model 7. The results are consistent.

Figure 5 and 6 displays the moderating effect of foreign competition based on Model 4 in Table 9. I plot the relationship between performance below aspiration and the extent of taking OFDI using different level of foreign competition in Figure 5. The high and low foreign competition means 1 standard deviation above and below the mean. The steeper slope for high foreign competition (1 standard deviation above the mean) in Figure 5 conforms to my prediction in Hypothesis 3a. The figure shows that firms in a higher foreign competitive industry (1 standard deviation above the mean) are more likely to increase their extent of OFDI. The proposed moderating effect of foreign competition is thus supported for hypothesis 3a. In Figure 6, I plot the relationship between performance below aspiration and the extent of taking OFDI using the highest level of foreign competition (equals one) and low foreign competition (1 standard deviation below the mean). Figure 6 shows that firms in industries with extremely high foreign competition increase their OFDI activity as their performance deviates from aspirations.

Among the significant controls, state ownership, central government control and BOD's political connections (across all models) have significantly negative effects on Chinese firms' OFDI, which means that government support will persuade firms to

focus their investment in domestic markets. Firm size (across all models) has positive effects on Chinese firms' OFDI. In contrast, firm age has a negative influence, which means younger firms in China more actively engage in OFDI activities. Also, previous international experience has a positive effect, suggesting that learning effect existed in firms' foreign expansion. The effect of industry globalization is significant, which consistent with literature' proposition.

Table 9: Zero-inflated negative binomial regression on OFDI

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Firm size	1.03***	0.98***	0.98***	1.02***	1.00***	1.02***	1.00***
	(0.07)	(0.07)	(0.07)	(0.08)	(0.07)	(0.08)	(0.07)
Firm age	-0.14**	-0.13***	-0.13***	-0.14***	-0.14***	-0.134***	-0.14***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Product diversification	-0.24	-0.23	-0.23	-0.20	-0.17	-0.19	-0.17
	(0.20)	(0.19)	(0.19)	(0.19)	(0.18)	(0.18)	(0.18)
Intangible assets	-0.03+	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Slack resource	-0.04	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
	(0.05)	(0.05)	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)
State ownership	-1.63***	-1.53***	-1.54***	-1.44***	-1.43***	-1.44***	-1.43***
	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)
Central government	-0.44*	-0.41*	-0.41*	-0.47*	-0.45*	-0.47*	-0.45*
	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
BOD's Political connections	-1.57**	-1.67**	-1.67**	-1.60**	-1.63**	-1.60**	-1.63**
	(0.60)	(0.60)	(0.60)	(0.60)	(0.60)	(0.60)	(0.60)
BOD's International exp.	0.59	0.65	0.65	0.52	0.43	0.51	0.43
	(0.44)	(0.44)	(0.44)	(0.44)	(0.44)	(0.44)	(0.44)
IJV experience	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Previous foreign subsidiaries	0.17***	0.16***	0.16***	0.16***	0.17***	0.16***	0.17***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Domestic investment	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Distance to bankruptcy	0.03+	0.02+	0.02	0.02	0.02	0.02	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry concentration	1.37	1.11	1.15	0.35	-0.18	0.32	-0.17
	(2.03)	(1.99)	(1.99)	(2.03)	(2.07)	(2.03)	(2.06)
Industry globalization	0.01	0.01+	0.01+	0.01+	0.01+	0.01	0.01+
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry growth	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry R&D intensity	0.45	0.47	0.48	0.52	0.55+	0.52	0.55+
	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)
Performance below aspiration		-6.27***	-6.19***	-6.10***	-10.68***	-6.12***	-10.83***
(H1a)		(1.76)	(1.75)	(1.77)	(2.90)	(1.77)	(2.92)
Performance above aspiration			0.34**	0.35**	0.34**	0.61	0.21
(H1b)			(0.11)	(0.11)	(0.11)	(1.12)	(0.93)
Foreign competition (H2)				2.15***	1.71**	2.16***	1.70**
				(0.56)	(0.59)	(0.56)	(0.59)
Performance below aspiration					10.79*		10.88*
×Foreign competition (H3a)					(5.09)		(5.12)
Performance above aspiration						-0.94	0.46
×Foreign competition (H3b)						(4.07)	(3.16)
_cons	-23.16***	-21.79***	-21.94***	-22.64***	-21.54***	-22.62***	-21.54***
	(2.631)	(2.637)	(2.636)	(2.649)	(2.746)	(2.649)	(2.745)
N	6181	6181	6181	6181	6181	6181	6181
ll	-1363.7	-1354.5	-1354.1	-1346.9	-1344.8	-1346.9	-1344.8
Incremental χ^2 to model 1		18.25***	19.16***	33.53***	37.67***	33.57***	37.68***
Incremental χ^2 to model 4					4.14**	0.05	4.16**

Robust standard errors in parentheses, based on a Huber-White sandwich estimator

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Fixed effects of year, region and industry are included in all the models

Figure 4: The direct effects of performance relative to aspiration on OFDI flow

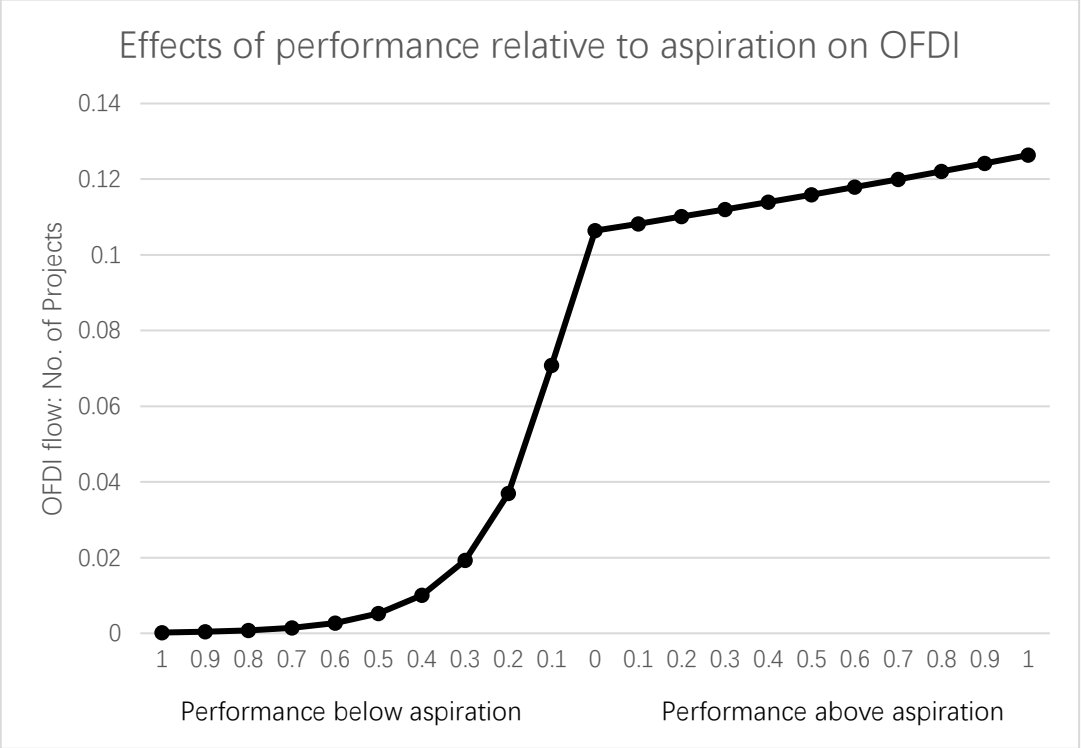


Figure 5: The moderating effect of foreign competition for OFDI

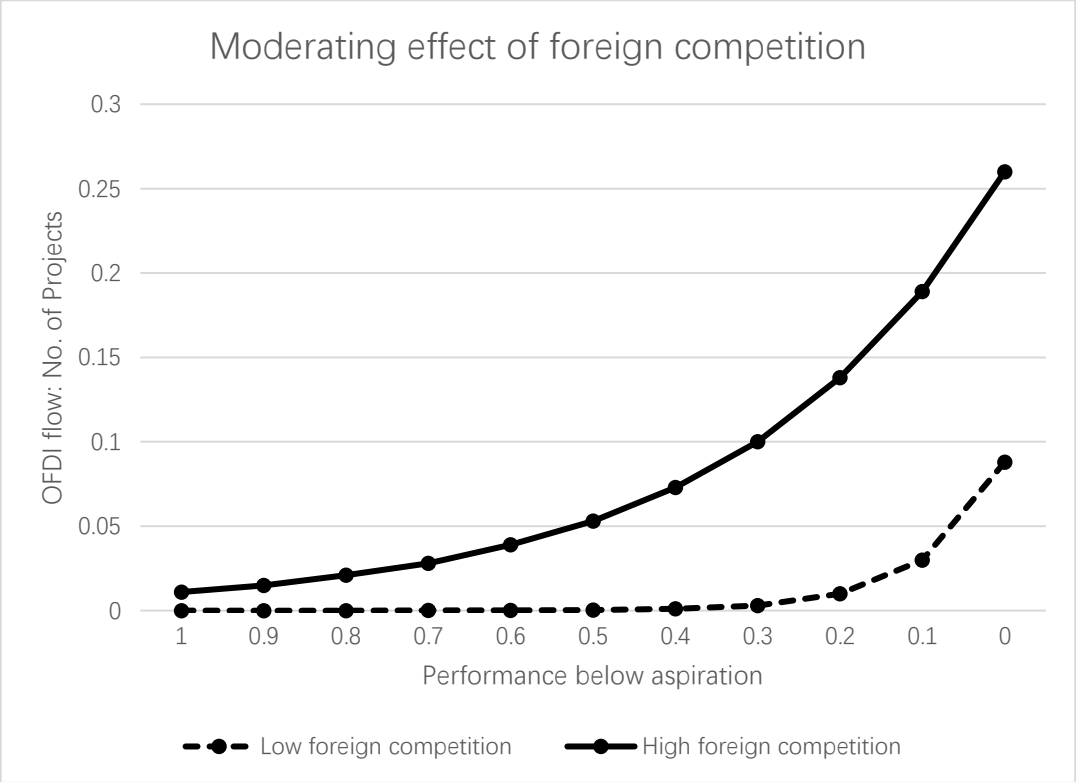
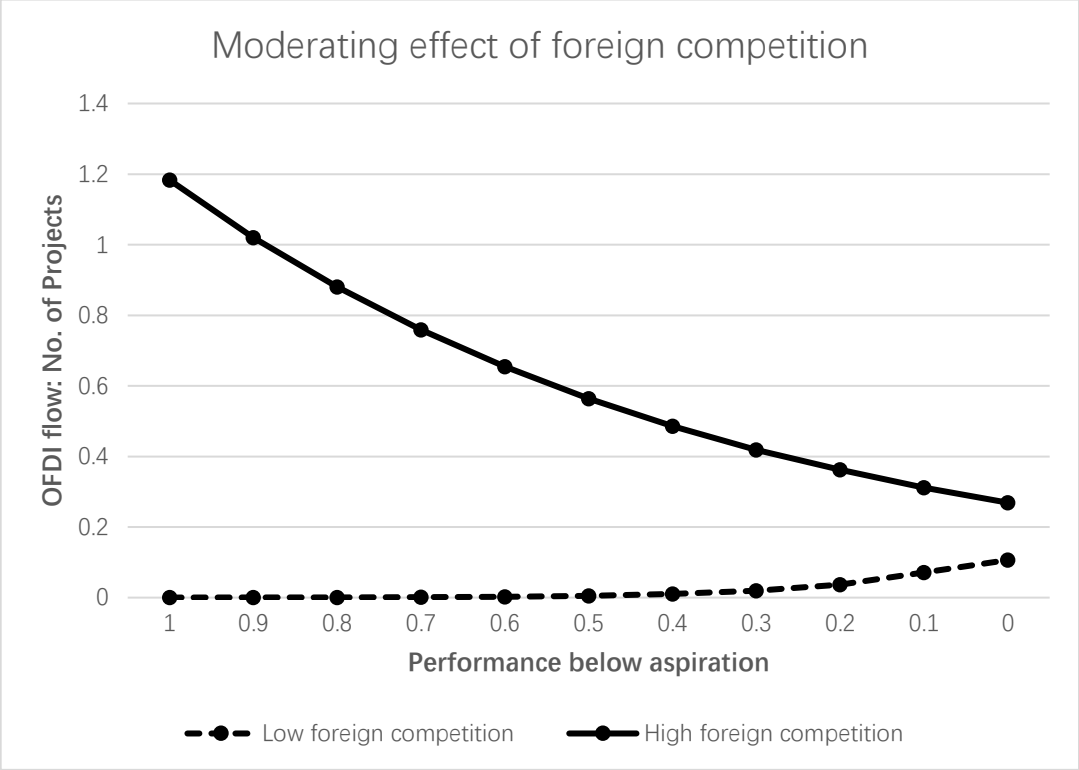


Figure 6: The moderating effect of highest foreign competition for OFDI



4.4.2 Robustness check

Even though the explanatory variable performance relative to aspiration level may be influenced by OFDI, reverse causality problems are less likely because most Chinese FDI projects have started only recently. Nevertheless, I controlled for possible biases in the estimation in several ways. I incorporate several variables that account for firm characteristics. Also, I used lagged independent variables to reduce the potential endogeneity bias, if any.

In addition to the results presented in Table 9, I conducted several other analyses to check the robustness of my results. First, to exclude the effect of performance variance, I included the performance variance in robustness check. I calculated the standard deviation of performance for each firm over a three-year period. As shown in Table 10, the results are consistent with my prediction and provide further support for the hypotheses. Second, I replaced the performance relative to aspiration variables to performance per se to explore if the effect on firms' OFDI decisions is because of performance relative to aspirations or performance per se. The results in Table 11 show that the performance per se does not have effects on the level of firms' OFDI.

Third, I further use two methods to measure the foreign competition and further test my hypotheses: (1) assets of FOEs divided by the total assets of all enterprises in the industry; (2) revenue of FOEs divided by the total revenue of all enterprises in the industry. The results of the regression analysis support my proposed relationships as shown in Table 12 and 13. Fourth, the significance of most of the effects except foreign competition was robust by splitting the sample based on firms' performance above or below aspiration levels. The results were shown in Table 14. In models 3 and 4, the coefficients for performance-aspiration were positive and significant, thereby providing further support for Hypothesis 1a and 1b. Moreover, in models 5, the coefficients for

interaction terms were significant and negative for firms performing below aspirations, which provides further support for hypothesis 3a. Also, the insignificant coefficient for interaction terms of foreign competition and firms performing above aspirations is consistent with main results and does not provide support for hypothesis 3b. However, one major difference with the main model analysis is that the coefficients for the foreign competition were not significant for firms performing above aspiration, but significant for firms performing below aspiration. That means foreign competition may persuade firms performing below aspiration levels to escape from the domestic market and expand to foreign markets, however, its influence on firms performing above aspiration was not obvious.

Fifth, I excluded investment projects in Hong Kong, Macau, and Caribbean tax havens (Bermuda, Virgin Islands, and the Cayman Islands) because outward FDI from China to these destinations may be driven by tax considerations (Hampton & Christensen, 2002). As shown in Table 15, the results are consistent with my predictions. Sixth, except the dummy variable for provinces in the main analysis, I further included the sub-national institutions as control variables in the robustness check in Table 16. Because of the data on sub-national institutions is from 2002 to 2007, the sample size in this robustness check is smaller than the main analysis. The results are still consistent and further support my predictions. Finally, I add firms' previous patent flow to control the influence of firms' technological capabilities on their outward FDI. As shown in Table 17, firms' pervious patent flow has a consistently positive effect on outward FDI.

Table 10: Robustness Check-Control for performance variance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Performance variance	0.49	0.11	0.58	0.66	0.57	0.09	0.64
	(0.48)	(0.58)	(0.42)	(0.42)	(0.42)	(0.56)	(0.45)
Firm size	1.03***	0.98***	0.98***	1.02***	1.00***	1.02***	1.00***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Firm age	-0.13***	-0.15***	-0.12***	-0.13***	-0.13***	-0.16***	-0.13***
	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)
Product diversification	-0.24	-0.48*	-0.23	-0.22	-0.20	-0.48*	-0.20
	(0.17)	(0.19)	(0.17)	(0.18)	(0.18)	(0.19)	(0.17)
Intangible assets	-0.04*	-0.04*	-0.04*	-0.04*	-0.04+	-0.04*	-0.04*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Slack resource	-0.10	-0.12+	-0.12	-0.13+	-0.13+	-0.13+	-0.13+
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
State ownership	-1.63***	-1.56***	-1.55***	-1.47***	-1.45***	-1.49***	-1.45***
	(0.34)	(0.35)	(0.34)	(0.35)	(0.35)	(0.35)	(0.35)
Central government	-0.43*	-0.41*	-0.40+	-0.46*	-0.44*	-0.47*	-0.44*
	(0.21)	(0.20)	(0.20)	(0.21)	(0.21)	(0.21)	(0.21)
BOD's Political connections	-1.34*	-1.61*	-1.41*	-1.34*	-1.38*	-1.56*	-1.37*
	(0.65)	(0.65)	(0.64)	(0.65)	(0.65)	(0.66)	(0.65)
BOD's International exp.	0.76	0.73	0.82+	0.70	0.61	0.62	0.61
	(0.46)	(0.45)	(0.46)	(0.46)	(0.45)	(0.45)	(0.45)
IJV experience	0.02	0.02	0.02	0.01	0.01	0.01	0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Previous foreign subsidiaries	0.17***	0.17***	0.16***	0.16***	0.17***	0.17***	0.17***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Domestic investment	0.04*	0.04+	0.05*	0.04*	0.04*	0.04+	0.04*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Distance to bankruptcy	0.03*	0.03*	0.03*	0.03*	0.03*	0.03*	0.03*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry concentration	0.65	1.04	0.45	-0.35	-0.87	0.31	-0.85
	(2.21)	(2.15)	(2.18)	(2.23)	(2.29)	(2.20)	(2.29)
Industry globalization	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry growth	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry R&D intensity	0.53	0.50	0.56+	0.61+	0.65*	0.56+	0.65+
	(0.33)	(0.34)	(0.34)	(0.33)	(0.33)	(0.33)	(0.33)
Performance below aspiration		-6.00***	-5.44**	-5.37**	-9.69***	-5.84***	-9.77***
(H1a)		(1.64)	(1.70)	(1.72)	(2.92)	(1.66)	(2.93)
Performance above aspiration			0.23*	0.24*	0.24*	0.10	-0.17
(H1b)			(0.11)	(0.11)	(0.11)	(0.74)	(0.54)
Foreign competition (H2)				2.21***	1.78**	2.18***	1.75**
				(0.61)	(0.64)	(0.61)	(0.65)
Performance below aspiration					9.93+		10.17*
×Foreign competition (H3a)					(5.09)		(5.06)
Performance above aspiration						0.56	1.43
×Foreign competition (H3b)						(2.58)	(1.83)
_cons	-24.72***	-23.08***	-23.39***	-24.26***	-23.16***	-24.28***	-23.18***
	(2.943)	(2.922)	(2.951)	(2.961)	(3.068)	(2.958)	(3.060)
N	5416	5416	5416	5416	5416	5416	5416
ll	-1166.8	-1157.0	-1159.9	-1153.3	-1151.6	-1150.2	-1151.5

Robust standard errors in parentheses, based on a Huber-White sandwich estimator

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Fixed effects of year, region and industry are included in all the models

Table 11: Robustness Check-Direct effect of performance

	Model 1	Model 2	Model 3
Firm size	1.04***	1.08***	1.07***
	(0.07)	(0.07)	(0.07)
Firm age	-0.13***	-0.13***	-0.13***
	(0.03)	(0.03)	(0.03)
Product diversification	-0.23	-0.20	-0.20
	(0.17)	(0.17)	(0.17)
Intangible assets	-0.02	-0.02	-0.02
	(0.02)	(0.02)	(0.02)
Slack resource	0.001	0.002	0.002
	(0.04)	(0.04)	(0.04)
State ownership	-1.60***	-1.50***	-1.51***
	(0.32)	(0.32)	(0.32)
Central government	-0.45*	-0.50*	-0.50*
	(0.20)	(0.20)	(0.20)
BOD's Political connections	-1.45*	-1.37*	-1.37*
	(0.59)	(0.59)	(0.59)
BOD's International exp.	0.64	0.51	0.51
	(0.42)	(0.42)	(0.42)
IJV experience	0.02	0.01	0.01
	(0.02)	(0.02)	(0.02)
Previous foreign subsidiaries	0.17***	0.17***	0.17***
	(0.05)	(0.05)	(0.05)
Domestic investment	0.01	0.01	0.01
	(0.02)	(0.02)	(0.02)
Distance to bankruptcy	0.02	0.02	0.02
	(0.01)	(0.01)	(0.01)
Industry concentration	1.29	0.54	0.56
	(2.00)	(2.01)	(2.01)
Industry globalization	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)
Industry growth	0.02+	0.02+	0.02+
	(0.01)	(0.01)	(0.01)
Industry R&D intensity	0.41	0.44	0.44
	(0.32)	(0.32)	(0.32)
GDP per capita	1.35	1.86	1.86
	(3.07)	(3.077)	(3.08)
Performance	0.65	0.652	0.78
	(0.95)	(1.030)	(1.38)
Foreign competition		2.02***	2.04***
		(0.55)	(0.56)
Performance ×Foreign competition			-0.41
			(2.02)
_cons	-23.49***	-24.14***	-24.16***
	(2.592)	(2.603)	(2.601)
N	6252	6252	6252
ll	-1386.5	-1380.0	-1380.0

Robust standard errors in parentheses, based on a Huber-White sandwich estimator

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Fixed effects of year, region, and industry are included in all models

Table 12: Robustness Check-Foreign competition (asset share)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Firm size	1.03***	0.978***	0.98***	1.03***	1.00***	1.02***	1.00***
	(0.07)	(0.07)	(0.07)	(0.08)	(0.07)	(0.08)	(0.07)
Firm age	-0.14**	-0.13***	-0.13***	-0.15***	-0.13***	-0.13***	-0.13***
	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
Product diversification	-0.24	-0.23	-0.23	-0.24	-0.13	-0.15	-0.13
	(0.20)	(0.19)	(0.19)	(0.19)	(0.17)	(0.17)	(0.17)
Intangible assets	-0.03+	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Slack resource	-0.04	-0.05	-0.05	-0.04	-0.04	-0.05	-0.05
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
State ownership	-1.63***	-1.53***	-1.54***	-1.46***	-1.42***	-1.44***	-1.42***
	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)
Central government	-0.44*	-0.41*	-0.41*	-0.44*	-0.44*	-0.45*	-0.44*
	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
BOD's Political connections	-1.57**	-1.67**	-1.67**	-1.59**	-1.58**	-1.55*	-1.57**
	(0.60)	(0.60)	(0.60)	(0.61)	(0.61)	(0.61)	(0.61)
BOD's International exp.	0.59	0.65	0.65	0.52	0.40	0.49	0.40
	(0.44)	(0.44)	(0.44)	(0.45)	(0.45)	(0.45)	(0.45)
IJV experience	0.02	0.02	0.02	0.01	0.02	0.01	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Previous foreign subsidiaries	0.17***	0.16***	0.16***	0.15***	0.16***	0.15***	0.16***
	(0.05)	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)	(0.05)
Domestic investment	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Distance to bankruptcy	0.03+	0.02+	0.02	0.02	0.02	0.02	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry concentration	1.37	1.11	1.15	1.06	0.22	0.75	0.28
	(2.03)	(1.99)	(1.99)	(1.95)	(2.06)	(2.00)	(2.04)
Industry globalization	0.01	0.01+	0.01+	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry growth	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry R&D intensity	0.45	0.47	0.48	0.48	0.55+	0.52	0.55+
	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)
Performance below aspiration		-6.27***	-6.19***	-5.82***	-12.19***	-6.26***	-12.36***
(H1a)		(1.76)	(1.75)	(1.76)	(3.52)	(1.78)	(3.54)
Performance above aspiration			0.34*	1.49***	0.33*	0.10	-0.49
(H1b)			(0.14)	(0.37)	(0.14)	(1.31)	(1.00)
Foreign competition (H2)				2.34***	1.83**	2.32***	1.78**
				(0.53)	(0.56)	(0.53)	(0.56)
Performance below aspiration					12.61*		13.47*
×Foreign competition (H3a)					(6.25)		(6.47)
Performance above aspiration						0.83	2.74
×Foreign competition (H3b)						(4.304)	(3.205)
_cons	-23.16***	-21.79***	-21.94***	-22.80***	-21.78***	-22.82***	-21.76***
	(2.63)	(2.64)	(2.64)	(2.68)	(2.69)	(2.67)	(2.77)
N	6181	6181	6181	6181	6181	6181	6181
ll	-1363.7	-1354.5	-1354.1	-1346.8	-1343.2	-1345.3	-1343.0

Robust standard errors in parentheses, based on a Huber-White sandwich estimator

$^{+}\ p < 0.1$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Fixed effects of year, region, and industry are included in all models

Table 13: Robustness Check-Foreign competition (revenue share)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Firm size	1.03***	0.98***	0.98***	1.02***	1.00***	1.02***	1.00***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Firm age	-0.14**	-0.13***	-0.13***	-0.13***	-0.13***	-0.13***	-0.13***
	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)
Product diversification	-0.24	-0.23	-0.23	-0.15	-0.13	-0.16	-0.14
	(0.20)	(0.19)	(0.19)	(0.18)	(0.17)	(0.18)	(0.17)
Intangible assets	-0.03+	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Slack resource	-0.04	-0.05	-0.05	-0.05	-0.04	-0.05	-0.05
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
State ownership	-1.63***	-1.53***	-1.54***	-1.46***	-1.44***	-1.46***	-1.44***
	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)
Central government	-0.44*	-0.41*	-0.41*	-0.45*	-0.44*	-0.45*	-0.44*
	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
BOD's Political connections	-1.57**	-1.67**	-1.67**	-1.59**	-1.61**	-1.59**	-1.61**
	(0.60)	(0.60)	(0.60)	(0.60)	(0.61)	(0.60)	(0.61)
BOD's International exp.	0.59	0.65	0.65	0.56	0.47	0.56	0.48
	(0.44)	(0.44)	(0.44)	(0.45)	(0.44)	(0.45)	(0.45)
IJV experience	0.02	0.02	0.02	0.01	0.01	0.01	0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Previous foreign subsidiaries	0.17***	0.16***	0.16***	0.15**	0.15**	0.15**	0.15**
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Domestic investment	0.02	0.02	0.021	0.02	0.02	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Distance to bankruptcy	0.03+	0.02+	0.02	0.02	0.02	0.02	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry concentration	1.37	1.11	1.15	0.72	0.11	0.76	0.18
	(2.03)	(1.99)	(1.99)	(2.01)	(2.07)	(2.00)	(2.06)
Industry globalization	0.01	0.01+	0.01+	0.01	0.01+	0.01	0.01+
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry growth	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry R&D intensity	0.45	0.47	0.48	0.50	0.54+	0.50	0.54+
	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)
Performance below aspiration		-6.27***	-6.19***	-6.31***	-12.53***	-5.87***	-12.74***
(H1a)		(1.76)	(1.75)	(1.78)	(3.65)	(1.76)	(3.69)
Performance above aspiration			0.34*	0.34*	0.33*	2.27	-0.70
(H1b)			(0.14)	(0.14)	(0.14)	(1.75)	(1.41)
Foreign competition (H2)				2.16***	1.65**	2.18***	1.59**
				(0.50)	(0.54)	(0.50)	(0.54)
Performance below aspiration					13.30*		13.87*
×Foreign competition (H3a)					(6.59)		(6.61)
Performance above aspiration						-1.96	2.93
×Foreign competition (H3b)						(4.22)	(3.96)
_cons	-23.16***	-21.79***	-21.94***	-22.94***	-21.91***	-22.95***	-21.95***
	(2.63)	(2.64)	(2.64)	(2.69)	(2.78)	(2.61)	(2.76)
N	6181	6181	6181	6181	6181	6181	6181
ll	-1363.7	-1354.5	-1354.1	-1346.1	-1344.2	-1346.1	-1344.0

Robust standard errors in parentheses, based on a Huber-White sandwich estimator

$^{+}\ p < 0.1$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Fixed effects of year, region, and industry are included in all models

Table 14: Robustness Check-Subsample analysis

	Model 1	Model 2	Model 3 Subsample Perf. below aspiration	Model 4 Subsample Perf. above aspiration	Model 5 Subsample Perf. below aspiration	Model 6 Subsample Perf. above aspiration
Firm size	1.03***	1.07***	0.90***	1.04***	0.89***	1.03***
	(0.07)	(0.07)	(0.08)	(0.15)	(0.08)	(0.14)
Firm age	-0.14**	-0.14***	-0.11***	-0.16***	-0.11***	-0.16***
	(0.04)	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)
Product diversification	-0.24	-0.20	-0.22	0.21	-0.21	0.20
	(0.20)	(0.18)	(0.20)	(0.30)	(0.19)	(0.30)
Intangible assets	-0.03+	-0.03	0.01	-0.06**	0.01	-0.07**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Slack resource	-0.03	-0.03	-0.05	0.02	-0.05	0.01
	(0.05)	(0.05)	(0.07)	(0.07)	(0.08)	(0.07)
State ownership	-1.63***	-1.52***	-1.49***	-1.24+	-1.48***	-1.24+
	(0.32)	(0.32)	(0.38)	(0.65)	(0.38)	(0.65)
Central government	-0.44*	-0.50*	-0.26	-0.95*	-0.25	-0.96*
	(0.20)	(0.20)	(0.22)	(0.48)	(0.23)	(0.48)
BOD's Political connections	-1.57**	-1.51*	-2.46**	-0.67	-2.46**	-0.69
	(0.60)	(0.61)	(0.77)	(1.11)	(0.77)	(1.12)
BOD's International exp.	0.59	0.47	1.10+	-0.33	1.00+	-0.31
	(0.44)	(0.44)	(0.58)	(0.79)	(0.57)	(0.79)
IJV experience	0.02	0.01	0.01	0.06+	0.01	0.06+
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)
Previous foreign subsidiaries	0.17***	0.17***	0.12	0.36***	0.12	0.37***
	(0.05)	(0.05)	(0.08)	(0.08)	(0.08)	(0.08)
Domestic investment	0.02	0.02	0.04+	0.002	0.04+	0.002
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)
Distance to bankruptcy	0.03+	0.02+	0.02	0.01	0.02	0.01
	(0.01)	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)
Industry concentration	1.37	0.60	-0.37	1.58	-0.56	1.40
	(2.03)	(2.04)	(3.41)	(3.11)	(3.48)	(3.04)
Industry globalization	0.01	0.01	0.01	0.03*	0.01	0.03*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry growth	0.01	0.01	0.01	0.02	0.01	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry R&D intensity	0.45	0.51	0.73*	0.35	0.76*	0.35
	(0.32)	(0.32)	(0.36)	(0.47)	(0.36)	(0.47)
Performance-aspiration		0.65	5.36**	0.30*	9.49**	-0.51
		(1.02)	(1.71)	(0.12)	(3.17)	(0.56)
Foreign competition		2.20***	2.53***	1.26	2.02**	1.15
		(0.56)	(0.67)	(1.09)	(0.72)	(1.08)
Performance-aspiration ×Foreign competition					-9.01+	2.88
					(5.21)	(1.90)
_cons	-23.16***	-24.05***	-22.07***	-37.23***	-21.46***	-34.62***
	(2.63)	(2.62)	(3.84)	(4.68)	(3.92)	(4.60)
N	6181	6181	4766	1415	4766	1415
ll	-1363.7	-1353.9	-915.3	-378.6	-914.3	-378.3

Robust standard errors in parentheses, based on a Huber-White sandwich estimator

$^{+}\ p < 0.1$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Fixed effects of year, region, and industry are included in all models

Table 15: Robustness Check-Exclude HK, Macau, and Caribbean tax haven

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Firm size	1.20***	1.14***	1.14***	1.17***	1.15***	1.17***	1.15***
	(0.09)	(0.09)	(0.09)	(0.10)	(0.10)	(0.10)	(0.10)
Firm age	-0.13**	-0.12**	-0.12**	-0.13**	-0.12**	-0.13**	-0.12**
	(0.04)	(0.05)	(0.05)	(0.05)	(0.04)	(0.05	(0.04)
Product diversification	-0.24	-0.17	-0.17	-0.18	-0.16	-0.18	-0.17
	(0.26)	(0.27)	(0.27)	(0.26)	(0.26)	(0.26	(0.25)
Intangible assets	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Slack resource	-0.04	-0.07	-0.06	-0.07	-0.07	-0.07	-0.07
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
State ownership	-1.12**	-1.03*	-1.03*	-0.94*	-0.89*	-0.94*	-0.89*
	(0.40)	(0.40)	(0.40)	(0.41)	(0.42)	(0.41)	(0.42
Central government	-0.46+	-0.43	-0.43	-0.50+	-0.48+	-0.50	-0.48+
	(0.28)	(0.27)	(0.27)	(0.29)	(0.29)	(0.29)	(0.29
BOD's Political connections	-1.23	-1.32+	-1.32+	-1.24	-1.28+	-1.23	-1.27
	(0.75)	(0.76)	(0.76)	(0.76)	(0.77)	(0.76	(0.77
BOD's International exp.	1.07+	1.18*	1.18*	1.01+	0.86	1.02+	0.87
	(0.60)	(0.60)	(0.60)	(0.60)	(0.59)	(0.61	(0.60
IJV experience	-0.002	-0.001	-0.001	-0.01	-0.01	-0.01	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Previous foreign subsidiaries	0.26***	0.25***	0.25***	0.25***	0.26***	0.25***	0.26***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Domestic investment	-0.003	0.001	0.001	0.0001	0.0004	0.0002	0.0004
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02	(0.02
Distance to bankruptcy	0.03*	0.03*	0.03*	0.03+	0.03+	0.03	0.03
	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02	(0.01)
Industry concentration	2.35	1.72	1.74	1.05	0.47	1.06	0.47
	(2.77)	(2.76)	(2.76)	(2.79)	(2.84)	(2.78)	(2.84)
Industry globalization	0.002	0.001	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry growth	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry R&D intensity	0.26	0.29	0.29	0.33	0.39	0.33	0.38
	(0.41)	(0.41)	(0.41)	(0.40)	(0.40)	(0.40)	(0.40)
Performance below aspiration		-7.26***	-7.20***	-7.15**	-13.57***	-7.10**	-13.71***
(H1a)		(2.17)	(2.16)	(2.18)	(3.71)	(2.17)	(3.73)
Performance above aspiration			0.28*	0.28*	0.26+	-0.11	-0.49
(H1b)			(0.14)	(0.13)	(0.14)	(0.73	(0.64)
Foreign competition (H2)				2.02**	1.46+	2.00**	1.41+
				(0.77)	(0.79)	(0.77)	(0.79)
Performance below aspiration					14.46*		14.92*
×Foreign competition (H3a)					(6.18)		(6.16)
Performance above aspiration						1.31	2.42
×Foreign competition (H3b)						(2.50)	(2.08)
_cons	-27.84***	-26.04***	-26.09***	-26.72***	-25.57***	-26.74***	-25.56***
	(3.639)	(3.732)	(3.731)	(3.733)	(3.825)	(3.728)	(3.819)
N	6181	6181	6181	6181	6181	6181	6181
ll	-973.9	-967.1	-967.0	-963.3	-961.1	-963.3	-960.9

Robust standard errors in parentheses, based on a Huber-White sandwich estimator

$^{+}\ p < 0.1$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Fixed effects of year, region, and industry are included in all models

Table 16: Robustness Check-Control for sub-national institutions

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Firm size	1.01***	0.98***	1.00***	1.07***	1.03***	1.07***	1.03***
	(0.09)	(0.09)	(0.09)	(0.10)	(0.10)	(0.10)	(0.10)
Firm age	-0.15**	-0.14***	-0.13**	-0.15***	-0.15***	-0.15**	-0.15***
	(0.04	(0.04)	(0.05)	(0.04)	(0.04)	(0.05)	(0.04)
Product diversification	-0.34	-0.32	-0.27	-0.21	-0.20	-0.20	-0.20
	(0.27	(0.28)	(0.31)	(0.27)	(0.27)	(0.28)	(0.27)
Intangible assets	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Slack resource	-0.09	-0.10	-0.08	-0.08	-0.08	-0.08	-0.08
	(0.09)	(0.09)	(0.08)	(0.09)	(0.09)	(0.09)	(0.09)
State ownership	-1.89***	-1.82***	-1.83***	-1.67***	-1.64***	-1.67***	-1.64***
	(0.38)	(0.38)	(0.38)	(0.39)	(0.40)	(0.39)	(0.40)
Central government	-0.35	-0.35	-0.35	-0.45+	-0.42+	-0.44+	-0.42+
	(0.23)	(0.23)	(0.23)	(0.25)	(0.25)	(0.25)	(0.25)
BOD's Political connections	-1.26	-1.33+	-1.38+	-1.33+	-1.35+	-1.33+	-1.35+
	(0.78)	(0.78)	(0.79)	(0.78)	(0.78)	(0.78)	(0.78)
BOD's International exp.	0.79	0.84	0.81	0.69	0.58	0.68	0.58
	(0.55)	(0.55)	(0.56)	(0.57)	(0.56)	(0.57)	(0.56)
IJV experience	0.02	0.02	0.02	0.01	0.01	0.01	0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Previous foreign subsidiaries	0.17*	0.16**	0.16**	0.15**	0.16**	0.16**	0.16**
	(0.06	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Domestic investment	0.04	0.04+	0.03	0.03	0.03	0.03	0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Distance to bankruptcy	0.04*	0.04+	0.03	0.03	0.03	0.03	0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Industry concentration	2.78	2.83	3.11	1.95	1.52	1.90	1.52
	(2.32	(2.32)	(2.32)	(2.44)	(2.44)	(2.41)	(2.43)
Industry globalization	-0.002	-0.001	-0.001	-0.001	-0.003	-0.002	-0.003
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry growth	0.03*	0.03*	0.03*	0.03*	0.03*	0.03*	0.03*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry R&D intensity	-0.11	-0.09	-0.07	-0.05	-0.04	-0.05	-0.04
	(0.36)	(0.37)	(0.37)	(0.36)	(0.37)	(0.37)	(0.37)
Sub-national institutions	0.04	0.04	0.05	0.05	0.03	0.05	0.03
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Performance below aspiration		-3.10*	-2.89*	-2.47*	-10.61*	-2.50*	-10.61*
(H1a)		(1.24)	(1.19)	(1.24)	(4.65)	(1.25)	(4.66)
Performance above aspiration			1.93*	2.07**	1.80**	2.43	1.82*
(H1b)			(0.77)	(0.70)	(0.65)	(1.56)	(0.90)
Foreign competition (H2)				2.93***	2.35***	2.94***	2.36***
				(0.67)	(0.67)	(0.67)	(0.67)
Performance below aspiration					16.26*		16.25*
×Foreign competition (H3a)					(6.98)		(7.02)
Performance above aspiration						-1.34	-0.06
×Foreign competition (H3b)						(2.71)	(1.90)
_cons	-25.31***	-24.79***	-25.62***	-27.01***	-25.29***	-26.94***	-25.30***
	(3.51)	(3.51)	(3.54)	(3.61)	(3.73)	(3.59)	(3.71)
N	4517	4517	4517	4517	4517	4517	4517
ll	-881.7	-880.1	-878.4	-869.5	-866.6	-869.4	-866.6

Robust standard errors in parentheses, based on a Huber-White sandwich estimator

$^{+}\ p < 0.1$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Fixed effects of year, region, and industry are included in all models

Table 17: Robustness Check-Control for previous patent flow

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Previous patent flow	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Firm size	1.04***	0.99***	1.00***	1.05***	1.03***	1.05***	1.03***
	(0.08)	(0.08)	(0.08)	(0.09)	(0.09)	(0.09)	(0.09)
Firm age	-0.15***	-0.14***	-0.14***	-0.16***	-0.16***	-0.15***	-0.15***
	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)
Product diversification	-0.28	-0.28	-0.28	-0.32	-0.29	-0.25	-0.22
	(0.19)	(0.19)	(0.19)	(0.21)	(0.21)	(0.19)	(0.19)
Intangible assets	-0.03+	-0.03+	-0.03	-0.02	-0.02	-0.03	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Slack resource	-0.13+	-0.14+	-0.13+	-0.13	-0.13+	-0.13+	-0.13+
	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
State ownership	-1.68***	-1.61***	-1.61***	-1.55***	-1.53***	-1.54***	-1.52***
	(0.35)	(0.35)	(0.35)	(0.36)	(0.36)	(0.35)	(0.36)
Central government	-0.51*	-0.48*	-0.48*	-0.53*	-0.52*	-0.55*	-0.54*
	(0.21)	(0.21)	(0.21)	(0.22)	(0.22)	(0.22)	(0.22)
BOD's Political connections	-1.97**	-2.04**	-2.04**	-2.15***	-2.18***	-2.10**	-2.14***
	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)
BOD's International exp.	0.69	0.76	0.76	0.69	0.60	0.67	0.58
	(0.51)	(0.51)	(0.51)	(0.50)	(0.50)	(0.51)	(0.50)
IJV experience	-0.0004	0.002	0.002	-0.002	-0.001	-0.01	-0.004
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Previous foreign subsidiaries	0.24***	0.23***	0.23***	0.21***	0.22***	0.23***	0.24***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)
Domestic investment	0.06**	0.06**	0.06**	0.05*	0.05*	0.06*	0.06*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Distance to bankruptcy	0.05**	0.04*	0.04*	0.03+	0.03+	0.04*	0.04*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Industry concentration	1.60	1.45	1.49	0.90	0.40	0.58	0.05
	(2.14)	(2.11)	(2.11)	(2.11)	(2.18)	(2.17)	(2.23)
Industry globalization	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry growth	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry R&D intensity	0.66+	0.68+	0.68+	0.70*	0.73*	0.73*	0.76*
	(0.35)	(0.35)	(0.35)	(0.34)	(0.34)	(0.35)	(0.35)
Performance below aspiration		-5.02**	-4.97**	-4.53*	-9.33**	-4.91**	-9.38**
(H1a)		(1.79)	(1.79)	(1.78)	(3.08)	(1.82)	(3.14)
Performance above aspiration			0.30*	1.53***	0.31*	0.42	0.12
(H1b)			(0.14)	(0.39)	(0.14)	(1.06)	(0.87)
Foreign competition (H2)				2.34***	1.94**	2.31***	1.87**
				(0.64)	(0.66)	(0.64)	(0.66)
Performance below aspiration					9.89+		10.02+
×Foreign competition (H3a)					(5.18)		(5.19)
Performance above aspiration						-0.35	0.69
×Foreign competition (H3b)						(3.76)	(3.00)
_cons	-40.04***	-38.45***	-37.98***	-40.36***	-38.31***	-40.23***	-38.73***
	(2.814)	(2.878)	(2.877)	(2.713)	(3.036)	(2.874)	(3.005)
N	5467	5467	5467	5467	5467	5467	5467
ll	-1123.6	-1118.5	-1118.1	-1113.0	-1111.5	-1111.7	-1110.1

Robust standard errors in parentheses, based on a Huber-White sandwich estimator

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Fixed effects of year, region and industry are included in all the models

4.4.3 Supplementary analysis

As I argued above, increased foreign competition in a firm's existing businesses will motivate firms performing below aspirations to take a foreign investment to change their situation compared to the firms in industries with the lower level of competition. With limited resources, these firms may relocate their resources to markets with higher profitability and investment efficiency, and expand their geographic scope to explore potential new sources of competitive advantage in low-cost offshore markets that strengthen their competitive capabilities at home, adding a more diverse set of locations to their geographic footprint (Almor et al., 2006; Dunning, 1988; Rugman & Verbeke, 2001). Accordingly, I further analyze the role of performance aspiration and foreign competition on the location of OFDI especially for firms performing below their aspiration levels. The results are shown in Table 18.

First, the main effect of the performance below aspiration on OFDI in developed and developing countries are both negative and significant. These results are consistent with H1a prediction. Similarly, performance above aspiration is positive and significant in all the models no matter in developed or developing countries. These results are consistent with H1b prediction. Second, effects of foreign competition are positive and significant for OFDI in developing and developed countries. These results provide support for H2. Finally, the interaction term of the performance below aspiration and foreign competition further support my prediction. Firms performing below aspirations will increase their investment in developing countries facing intense foreign competition and with limited resources. In other words, they will escape from their domestic markets to foreign countries with higher profitability and investment efficiency to balance their situation by developing international diversification opportunities, thereby reducing their vulnerability to the "attacks" by competitors.

Table 18: Supplementary Analysis-Location choice

	Model 1 OFDI in developed countries	**Model 2 OFDI in developed countries**	**Model 3 OFDI in developed countries**	**Model 4 OFDI in developing countries**	**Model 5 OFDI in developing countries**	**Model 6 OFDI in developing countries**
Firm size	1.13***	1.11***	1.13***	1.00***	0.99***	0.99***
	(0.11)	(0.11)	(0.12)	(0.09)	(0.09)	(0.09)
Firm age	-0.11**	-0.11**	-0.12**	-0.15***	-0.11***	-0.15***
	(0.04)	(0.04)	(0.04)	(0.02)	(0.02)	(0.02)
Product diversification	-0.07	-0.06	-0.08	-0.19	-0.13	-0.17
	(0.33)	(0.33)	(0.32)	(0.24)	(0.19)	(0.24)
Intangible assets	-0.04+	-0.03	-0.04+	-0.02	-0.03	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Slack resource	-0.05	-0.04	-0.05	-0.03	-0.04	-0.03
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
State ownership	-1.04*	-1.01*	-1.04*	-1.66***	-1.62***	-1.65***
	(0.45)	(0.45)	(0.45)	(0.37)	(0.36)	(0.37)
Central government	-0.59+	-0.58+	-0.59+	-0.35+	-0.40*	-0.36+
	(0.34)	(0.34)	(0.34)	(0.21)	(0.20)	(0.21)
BOD's Political connections	-2.51**	-2.56**	-2.50**	-0.52	-0.64	-0.47
	(0.83)	(0.84)	(0.83)	(0.70)	(0.70)	(0.70)
BOD's International exp.	1.97**	1.88**	1.99**	-0.29	-0.51	-0.27
	(0.63)	(0.62)	(0.63)	(0.52)	(0.52)	(0.52)
IJV experience	0.01	0.01	0.01	0.05***	0.07***	0.05***
	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
Previous foreign subsidiaries	0.03***	0.03**	0.03***	0.01	-0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.004)	(0.01)
Domestic investment	-0.02	-0.02	-0.02	0.05*	0.06*	0.06*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Distance to bankruptcy	0.02	0.01	0.02	0.02	0.02	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry concentration	-3.55	-3.89	-3.54	1.88	0.77	1.53
	(3.17)	(3.19)	(3.17)	(1.84)	(2.08)	(1.87)
Industry globalization	0.02*	0.02*	0.02*	0.004	0.01	0.004
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry growth	0.01	0.004	0.01	0.01	0.02	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry R&D intensity	0.13	0.19	0.13	0.80*	0.91**	0.79*
	(0.48)	(0.48)	(0.48)	(0.35)	(0.34)	(0.35)
Performance below aspiration	-7.83**	-13.19**	-7.72**	-5.46**	-9.24**	-5.82**
(H1a)	(2.68)	(4.44)	(2.67)	(1.97)	(3.18)	(2.02)
Performance above aspiration	0.32*	0.31*	0.47	1.65***	1.621***	1.46
(H1b)	(0.13)	(0.13)	(0.60)	(0.30)	(0.30)	(1.19)
Foreign competition (H2)	2.19*	1.75+	2.16*	1.88**	1.55+	1.87*
	(1.01)	(1.05)	(1.01)	(0.73)	(0.73)	(0.73)
Performance below aspiration		12.25			9.88*	
×Foreign competition (H3a)		(7.48)			(4.52)	
Performance above aspiration			2.66			-3.83
×Foreign competition (H3b)			(2.05)			(4.30)
_cons	-20.48***	-19.74***	-20.51***	-26.68***	-26.01***	-26.82***
	(3.93)	(4.01)	(3.93)	(2.77)	(2.76)	(2.92)
N	6181	6181	6181	6181	6181	6181
ll	-698.3	-697.2	-698.1	-900.9	-903.6	-900.7

Robust standard errors in parentheses, $^{+}\ p < 0.1$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$
Fixed effects of year, region and industry are included in all the models

4.5 Discussion and Conclusion

The objective of this study is to provide and test a firm-level behavioral explanations for differences in firms' propensities to engage in international expansion. I considered firm-level behavioral motivations to engage in foreign expansion. The basic contention in this study is that behavioral variables help explain internationalization after other firm and industry factors are controlled for. The results point to the relevance of performance feedback for corporate strategic decisions. Even after controlling other explanations, I found that firm-level behavioral characteristics played a significant role in explaining which firms engaged in OFDI activity.

My theoretical arguments extend the behavioral theory of the firm (Cyert & March, 1963) to the context of a corporate strategy of OFDI decision and firms from emerging economies. In general, I find that variables associated with problemistic and slack search are relevant to explaining the OFDI decisions, but the effects are not always in the predicted directions. There is a significant difference for firms performing below and above their aspiration levels in their propensity to engage in OFDI in response to performance feedback. I also find foreign competition in domestic markets influences firms' resource allocation and focus of attention, and further influences their propensity for OFDI for firms performing below aspiration levels.

According to behavioral theory, a negative attainment discrepancy should induce a firm to search for other viable opportunities. Rather than finding results fully consistent with problemistic search, I found that the propensity of OFDI increased as performance improved up to aspiration level, and then increased at a slower speed after exceeding aspiration level. The positive effect of performance aspiration on OFDI for firms performing above aspiration level was consistent with slack search argument.

The effect of attainment discrepancy for below-aspiration firms deserves further

investigation. I proposed two reasons for this positive relationship. First, the resource availability might constrain their motivation. The behavioral theory of the firm did not consider the resource availability and capability for the firm under the situation that performs far below aspiration levels. The implicit assumption in prior research that firms have enough resources to undertake organizational change, even though their performance far below the aspiration level, should be released, especially for firms from emerging economies. Second, below aspiration performers may engage in domestic investment directly toward improving the performance of existing businesses in the home market rather than turn to a search of internationalization with limited resource. Managers of organizations with low performance may change them in ways other than internationalization, such as downsizing, productivity improvement, or diversification (Ahmadjian & Robinson, 2001; Anand & Singh, 1997). Thus, the link between an organizational problem and foreign expansion is obscured by noise generated by alternate sources of solutions.

Similar to foreign competition effects in developed markets, foreign competition in emerging countries also persuades firms to take OFDI. However, by further analysis on foreign competition effects on firms performing below and above aspiration levels, I find that foreign competition has a more important effect on firms performing below aspiration levels. First, foreign competition directly persuades these firms escape from the domestic market to access competitive advantages abroad. Moreover, foreign competition influences these firms' resource allocation and focus of attention, which further influence their propensity for OFDI. Moreover, by analyzing the effects of performance aspiration on the location of OFDI, I find that firms performing below aspirations will increase their OFDI in developing countries.

This study points to the need for a behavior understanding of OFDI activity in

particular and corporate strategy in general. Overall, the empirical results indicate the potential of behavioral variables to add to researchers' ability to explain internationalization decisions. Further research is necessary to explore more fully the applicability of behavioral theory to corporate phenomena. Also, for the international business area, future research could analyze if firms performing above or below aspirations might have different strategies in their foreign expansion like ownership strategy. Moreover, this study is in China but has more general implications. Future research could test these effects in other contexts.

CHAPTER FIVE: CHINESE FIRMS' OUTWARD FDI AND INNOVATION

5.1 Introduction

Technological capabilities have long been recognized as the main driver of economic growth and an important source of competitive advantage for firms (Porter, 1990; Teece, 1986). Thus, developing technological capabilities has been an important objective for indigenous firms in emerging markets like China (Amsden, 2001; Bell & Pavitt, 1995). Emerging market firms, however, typically lag behind their counterparts in developed markets in technological development (Cuervo-Cazurra & Genc, 2008). From a value chain perspective, while more knowledge-intensive, higher value-added activities such as R&D and marketing tend to concentrate in developed markets, less knowledge-intensive, lower value-added activities such as repetitious and standardized manufacturing and services tend to be located in emerging markets (Ernst & Kim, 2002). Thus, as latecomers to their industries relative to their counterparts in developed markets, emerging market firms like China have strong incentives to acquire the resources and catch up in their innovative capabilities that will help them to compete in higher value-added activities (Mathews, 2002; Mudambi, 2008).

From the organization learning perspective, both exploitation and exploration involve different aspects of organizational learning, yet are equally essential for organizational survival and prosperity. Many studies (Lecraw, 1983; Luo & Tung, 2007; Makino & Delios, 1996) propose that firms engaging in FDI are not only to transfer their resources to a host country, but also to access the necessary strategic assets in the host country. In support of this perspective, a growing amount of literature has suggested that much of inward Japanese FDI in the U.S. is motivated by strategic asset-seeking purposes (Chang, 1995; Kogut & Chang, 1991). Makino, Lau, and Yeh (2002)

found that newly industrialized economies (NIE) firms engage in FDI in a developed country when they intend to seek technology-based resources and skills. Also, EM MNEs use outward investments as a springboard to acquire strategic assets needed to compete more effectively against global rivals (Luo & Tung, 2007). Accordingly, OFDI is an important learning method for MNEs in searching strategic assets in foreign markets.

Even though the effects of international diversification on innovation is not new, this study is different from literature in two perspectives. First, based on organizational learning theory and resource-based view, Hitt et al. (1997) propose a positive effect of international diversification on firm innovation because international diversification provides firms with incentives to invest in innovation, resources to invest in innovation, and greater returns from innovation. Different from these developed market firms, emerging market MNEs are latecomers in technological capabilities and international diversification is their method to close this gap and improve their technological capabilities.

Second, evolutionary theories of the MNE suggest that knowledge and assets accessed and assimilated from foreign locations enrich the firm's knowledge bases which can lead to enhanced innovation performance (Birkinshaw & Hood, 1998; Kogut & Zander, 1993). Nevertheless, these studies have focused on the gains accrued at the subsidiary level and, therefore, as a result, we know little about whether and how the knowledge acquired in foreign markets could affect the innovation performance of the parent firm of the MNEs.

In this essay, I propose that it is important to analyze the effects of OFDI in developed markets on emerging market MNEs' parent firm innovation capabilities. I also expect to analyze how the performance relative to aspirations and industry

competition influence the relationship between outward FDI in developed countries and firms' innovation. I test my theoretical arguments using a dataset that consists of a comprehensive sample of Chinese manufacturing firms listed on the mainboard of Shenzhen and Shanghai Exchange over the period 2002-2010.

5.2 Theory and Hypotheses

Knowledge is the important component to a company's innovation (Grant, 1996). Based on the literature on the innovation of firms in developed countries, companies can generate the requisite knowledge for innovation internally through in-house research and development (R&D) and marketing and externally through channels such as strategic alliances and acquisitions (Ahuja, 2000; Danneels, 2002). Adapting this framework to the emerging market context, Chinese firms could in principle focus on internal innovation to catch up with technology leaders in developed markets. However, they may not have the necessary resources or capabilities for internal development (Li et al., 2010). Alternatively, Chinese firms can invest in developed markets to tap advanced technological knowledge (Mudambi, 2008). This catch-up strategy is viewed as a 'springboard' to overcome Chinese MNEs' latecomer disadvantages in technological areas (Luo & Tung, 2007).

5.2.1 Relationship between OFDI and innovation in home country

Conducting outward FDI to seek technological knowledge and enhance innovative capabilities is not a new phenomenon, nor is it unique to Chinese MNEs. Chinese MNEs, when investing in developed markets with a comparative technology advantage, can benefit from knowledge spillovers in these markets. First, Chinese MNEs, via acquisitions of technologies or companies in developed markets, can gain direct access

to sophisticated technologies and skilled labor. Second, Chinese MNEs can benefit from knowledge spillovers of local suppliers, customers, competitors and research institutions by establishing formal or informal network ties with them when they set up a foreign subsidiary in these markets (Cantwell & Mudambi, 2011). Such network ties not only increase the frequency and intensity of information exchange between Chinese MNEs and local knowledge holders in developed markets, but also allow Chinese MNEs to identify and recruit persons who can bring critical technological knowledge transfer from local knowledge holders to Chinese MNEs (Jaffe & Trajtenberg, 1993; Saxenian, 1991; Song, Almeida, & Wu, 2003).

Even though Chinese MNEs share the same targets with other firms in accessing and learning strategic assets in host countries, they are still different from the MNEs of Japan and newly industrialized economies (NIE). For MNEs from Japan and NIE, outward investments have been driven mainly by "push" factors, such as small, saturated domestic markets, rising labor shortages, escalating operating costs, and growing current-account surpluses. OFDI by Chinese multinationals, in contrast, has been triggered primarily by "pull" factors, such as raised foreign exchange income, penetrating new markets, securing supplies of key natural resources, circumventing host country trade barriers, and acquiring strategic assets. Following this logic, even though Chinese MNEs actively go abroad to search resources, a huge domestic market still attractive and important for them. Access to a wide range of external resources is a critical ingredient for improving Chinese MNEs' innovative capability and increasing the firms' bargaining power in domestic markets. These firms may channel back their capabilities and resources to upgrade their domestic manufacturing and compete against rivals in a strong position in domestic markets.

Chinese MNEs may pursue developed market investment primarily to repatriate

intangible strategic assets to their home markets (Child & Rodrigues, 2005; Luo & Tung, 2007; Rui & Yip, 2008). In this scenario, they are not always initially looking to compete directly in international markets or develop the necessary cutting-edge R&D capabilities to do so (Awate, Larsen, & Mudambi, 2012). Rather, OFDI may lead to reverse knowledge transfer of technologies that can be rapidly put into production in the domestic market. Indeed, the idea Chinese MNEs use 'knowledge accessing' strategies, in which they look to repatriate the strategic assets of developed markets MNEs so that they can be imitated using lower cost production techniques, has recently received some support (Awate et al., 2012).

One potentially important explanation for Chinese firms undertaking OFDI, therefore, is not to develop firm-specific advantages for international competition. Rather, OFDI is seen as a means of transferring various capabilities, expertise and technologies back to the domestic market which is used to compete in the developed market MNEs domestically (Luo & Tung, 2007; Ramamurti, 2012). For large emerging markets such as China, developing stronger domestic market positions could be considered an important driver of such asset-seeking behavior (Luo & Tung, 2007; Ramamurti, 2012). Accordingly, I propose that

Hypothesis 1: Chinese MNE's outward FDI in developed countries positively affects its number of a patent filed in the home country.

5.2.2 Moderating effect of performance aspiration

Numerous factors determine an MNE's capability to not only acquire foreign strategic assets but also, more importantly, to absorb and harness such assets. Interactions between performance below aspirations and OFDI in developed markets influence both the willingness and the ability of firms to improve innovation capabilities. First, effects

of OFDI in developed markets on a willingness to improve innovation capabilities are likely weaker for firms performing below aspiration levels. Organizational search can be conducted in both the market domain and the technology domain (Rosenkopf & Nerkar, 2001). Organizational search in the market domain is conducted by adding products to obtain a wider market position or adding customers to get a deeper market penetration. Firms in developing economies face an environment in which factors such as lower income and literacy levels result in slower product diffusion and lower final penetration than in developed nations (Talukdar, Sudhir, & Ainslie, 2002). Such conditions increase the firm's dependence on marketing volume and approach for its sales penetration and make marketing a likely target of management attention when the firm's performance is below the aspiration level. Thus, one would expect such firms to respond to the low performance by searching new markets.

In contrast, R&D intensity is adjusted in response to performance across a wide range of industries in developed economies (Chen, 2008; Chen & Miller, 2007). This is because search through R&D can solve performance problems stemming from outdated product lines. The risk of product line obsolescence is high in developed economies because of the high competition and frequent use of technological advances as competitive weapons. Emerging economy firms face a different situation because they can often make faster and more predictable technological progress by licensing technologies from firms that are more advanced. So, it is not obvious that internal R&D search is the natural response of an emerging economy firm that has performance problems. Accordingly, although market and technology search both have effects in the short and long terms, managers may see market search as a quicker route to improved performance, given the long lead times common in R&D.

The interaction between performance below aspiration and OFDI in developed markets can also influence firms' ability to improve innovation capabilities. Firms performing below aspiration levels are less capable of responding to and exploiting the advanced knowledge in foreign markets, which hinder their ability to innovate. Thus, firms performing below aspiration levels have fewer opportunities to access strategic assets in foreign expansion and transfer them back to home country. I propose that it negatively moderate the relationship between OFDI in developed markets and firm innovation.

Hypothesis 2a: Firms' performance relative to aspiration levels (below aspirations) negatively moderate the effect of outward FDI in developed markets on its number of a patent filed in the home country.

Firms with positive performance feedback are likely to reduce their attention toward the problemistic search because they already are in a fully satisfactory position regarding their simplified representation of performance. In contrast, these firms will pay attention to slack search by using their resources to further develop competitive advantages. As firm performance exceed aspiration level, these firms have capabilities to take risky investment in technological seeking. Also, this is the efficient way for them to further develop competitive advantages and improve their performance. Moreover, firms performing above aspirations have the higher capability to bridge distant technological contexts and acquire complementary assets to develop new capabilities based on their slack resources. Thus, I propose the following for firms performing above aspiration levels:

Hypothesis 2b: Firms' performance relative to aspiration levels (above aspirations) positively moderate the effect of outward FDI in developed countries on its rate of launching innovations.

5.2.3 Moderating effect of industry competition

Traditional industrial organization thinking emphasizes that a firm' strategy and performance depends on the conditions within a given industry (Porter, 1990). In the first essay in analyzing the determinant of Chinese firms' OFDI, I focused on the effects of firms' exposure to foreign competition in the home market. Some studies have begun to explore this issue and proposed that foreign competition in the domestic market increase firms' OFDI no matter from 'global focusing' strategy perspective (Wiersema & Bowen, 2008) or 'escape hypothesis' perspective (Hutzschenreuter & Grone, 2009). Because foreign competition influence firms' aspiration for foreign investment, understanding of foreign market, and capability in competing with foreign firms in global markets, it is reasonable to analyze its effect on OFDI decision. However, when I examine the firms' innovation outputs in domestic markets, it is obvious I should pay attention to the overall industry competition instead of focusing on foreign competition in domestic markets.

The literature on industrial organization emphasizes the role of a firm's competitive environment. The gradual erosion of government-imposed entry barriers leads to an environment of 'hyper competition' that was previously unseen in some industries. The increasing competitive pressure acted as a selection mechanism. Firms that were more efficient became even stronger and were able to compete in global markets. For firms in fiercely competitive industries, to maintain cost advantages they must implement

innovation that reduces costs in the organization (Zeng & Williamson, 2007). I expect that firms that operate in home industries with higher competition are more likely to strengthen their cost or technological advantages.

Hypothesis 3: The greater the competition in an industry in the Chinese MNE's home country, the higher the (positive) effect of outward FDI in developed markets on its rate of launching innovations.

5.3 Methods

5.3.1 Sample

The dataset was compiled from several sources. First, I obtained the basic information and financial data on listed firms from the China Stock Market and Accounting Research (CSMAR) database, which is considered a reliable database. I exclude firms in the service sector as service firms are different from manufacturing firms in their financial structures and ways of measuring their innovation (Lien et al., 2005). Thus, the sample consists of 832 firms. Next, I manually collect information on overseas subsidiaries from listed firms' annual reports for 2002-2010. I choose 2002 as the starting year because FDI from China surged after China's access to the WTO in 2001 (MOFCOM, 2009). I define a subsidiary as any entity where the listed firm holds at least 20% of the equity. In annual reports required by Chinese authority, 20% of equity is the threshold of disclosure of subsidiaries. I identify the establishment of an overseas subsidiary by comparing full subsidiary lists of a given firm for consecutive years. If an overseas subsidiary appeared in firm i's annual report of year t but not in that of year t-1, I further check the annual report and other documents about the firm for year t to confirm the establishment year for the subsidiary.

Patent data in China is available on the SIPO website. It provides formatted data covering all patent applications since 1985 when China established its patent system and provides detailed patent application information. I obtained the patent data on listed firms from Chinese Patent Database, which is developed by several scholars. Following Hall and Ziedonis (2001) pioneering work matching USPTO patents to Compustat (listed) firms, these scholars generated the Chinese Patent Database matching China's State Intellectual Property Office (SIPO) patent information with listed firms. Because the database only matched the listed firms on the main board of Shanghai and Shenzhen Exchange, finally, the sample for this essay consists of 638 manufacturing firms from 2002 to 2010. In this dissertation, I limit my research to invention patents because they represent innovations of high quality, whereas no substantial examination is required for the other two types of patents, utility models, and design patents.

Industry-level data were obtained from the WIND database, a database that is widely regarded as one of the most comprehensive and authoritative data sources in China (Peng et al., 2008), and China Statistical Yearbook on Science and Technology. I use one-year lag for all the explanatory variables to avoid possible endogeneity with the dependent variable.

5.3.2 Dependent variable

To measure the firms' *innovation output*, I use the number of patents granted to the parent firm each year during the sample period. As I interpreted filing a patent application that was eventually granted as producing the patent, I specify the years for the granted patents to the filing year. Because the sample period for the database ends in 2010, I could guarantee the granted decisions for all the patent filed. Also, my measure captures the "flow" rather than the stock of patents.

5.3.3 Independent and moderating variables

To better capture the value of Chinese firms' foreign investment, I measured the firms' *outward FDI* as the registered amount of money in developed countries each year. Then, I take the log of the investments amount. Table 19 shows the lists of developed countries

Similar to the first essay, following Cyert and March (1963), I computed aspiration level (A) as a mixture of social and historical aspiration levels. The social aspiration level (SA) is the average of other firms' performance (P), calculated as the mean ROA of all firms in the same three-digit industry. The historical aspiration (HA) level is a mixture of past-period historical aspiration level and the previous performance of the focal firm. Letting α_1 and α_2 be weights, the formulas are:

$$Ati= \alpha_1 SA_{ti} + (1- \alpha_1) HA_{ti}$$

$$SA_{ti}=\sum P_{tj} /\text{no. of firms in the industry}$$

$$HA_{ti}= \alpha_2 P_{t-1} + (1- \alpha_2) HA_{t-1,\, i}$$

Here, t is time, and i and j indicate firm. I estimated the weights by searching all parameter values by increments of 0.1 and taking the combination giving the highest model "log-likelihood". This procedure yielded a value of 0.1 for α_1 and a value of 0.9 for α_2. To distinguish between the situations where performance above and below a firm's aspiration level, I specified performance as a spline function (Greene, 2003) of firm performance relative to their aspiration level, with a knot at 0: *performance-aspiration>0* for the cases where performance is above the aspiration level, and *performance-aspiration<0* for cases where performance is below the aspiration level. I take the **absolute value** for performance below aspirations.

Industry competition. I measured it based on the Annual Census data. Specifically, it is measured as one minus the Herfindahl index. The Herfindahl index equals the squared sum of sales percentages of firms in each three-digit industry. I rescale the

industry competition proxy by multiplying it by 100 so that a high value reflects a highly competitive industry.

5.3.4 Control variables

I included several firm-level time-varying control variables that may also influence a firm's innovation: firm size, age, product diversification, intangible assets, slack resources, state ownership, international joint venture (IJV) experience, previous foreign experience, quality of the previous patent, board size, CEO duality, and ownership concentration. I controlled for *firm size* since larger firms typically have more slack resources for innovation, which is measured by the logarithm of a firm's total assets. *Firm age* was controlled for as a proxy for experience and resources. Hitt et al. (1997) found that *product diversification* influences a firms' innovation outputs. To control for its possible effect, I include this variable, measured by Entropy index approach which is conventionally applied to calculate diversification and considers the number of industries the firms participates in, the proportion of sales from each industrial sector. Accordingly, product diversification is measured as $\sum p_i * \ln (1/P_i)$, where Pi is the proportion of sales in industry i. I also included the logarithm of *intangible assets* to control for the impact of firms' technological capability on firms' innovation. According to the Chinese accounting standards, intangible assets are defined as long-term non-monetary assets without physical forms held by enterprises, including patents, non-patent technology, trademarks, copyrights, land use rights and concessions.

To control for the effect of *slack resources*, I measured it as the ratio of debt to assets (Bromiley, 1991). Since greater debt gives lower borrowing ability, the prediction for this measure is a negative coefficient. Following previous literature, I adopted a

three-step procedure to develop the measurement for *state ownership*. First, following prior studies (Delios et al., 2006), I captured the ownership type of a listed firm's largest ten shareholders. Second, I coded the state ownership regarding the ratio of shares held by this shareholder if the shareholder's ownership type is an SOE; otherwise, its state ownership is coded as '0.' Third, I summed all the shareholders' proportion of SOE shares. For *IJV experience*, I developed a count measure to capture Chines firms' involvement in IJVs established with foreign firms in the home country. To control for *firms' previous international experience*, which influences firms' further investment in foreign markets, I measured the number of OFDI projects by the firms accumulated to year t.

There are several methods to analyze the *quality of patents*, such as patent citation, renewal data, and international patent classification (IPC). The most widely used patent quality indicator is the number of forward citations (Harhoff, Scherer, & Vopel, 2003; Trajtenberg, 1990). The relationship between citation and patent value are empirically confirmed (Albert, Avery, Narin, & McAllister, 1991; Harhoff, Narin, Scherer, & Vopel, 1999; Trajtenberg, 1990). Unfortunately, SIPO does not document citation information. By using patent renewal data to measure the quality, the major limitation is the inadequate timeliness. Accordingly, I measure the quality of the patent by adopting the conventional approach based on the concentration of patent technology classes (Huang & Murray, 2009; Jia et al., 2015; Trajtenberg, Henderson, & Jaffe, 1997). Following this approach, I first constructed a Herfindahl-Hirschman Index (HHI) using the concentration of patent technology classes for each patent applications for the firms. For example, a patent technology class includes A23, A61, and A61.The Herfindahl index is calculated as $(1/3)^2+ (2/3)^2=5/9$. Then, I take the average of all the patent applications per firm as the quality of their patent. The lower the level of HHI means a

higher novelty patent application.

I controlled *board size* that was measured by the number of directors because board size may reflect the diversity of board members' background and information sources and potentially affect firms' international expansion (Puffer, McCarthy, Jaeger, et al., 2013). I also included the effects of *CEO duality* by a dummy variable (1=the same person for both CEO and chairman position, 0=two different persons), since that duality may determine a firm's willingness to take a risk in pursuing a short-term or long-term goal (Peng et al., 2010). For *ownership concentration*, it was measured by the no. of shares the largest shareholder has. The information of directors, CEO and ownership concentration was obtained from CSMAR.

I also controlled several industry level variables. *Industry growth* was measured by the annual growth of sales in the industries. Moreover, given that consistent firm-level data on R&D intensity are not widely available in China, I use *industry R&D intensity* as a proxy. This variable is measured by the ratio of R&D expenditure to total sales of an industry in which a firm operates. To measure the *foreign competition* in the domestic market, I used the number of employees in all foreign-owned enterprises (FOEs) divided by the number of employees in all enterprises in an industry to measure the foreign competition.

I used a set of year dummy variables to capture omitted variables that evolve over time. I also fixed the effects of sub-national regions by including dummy variables using two-digit area codes for provinces, autonomous regions, and centrally administered cities and the industry dummies to control for industry effects.

5.3.5 Model estimation

The use of count of foreign subsidiaries as the dependent variable proposes the use of

a count model, such as a negative binomial (NB) or Poisson model. The NB model is more appropriate because the distribution of OFDI counts in our sample indicates over dispersion and Poisson model requires the standard deviation of the dependent variables is closed to the mean (Greene, 2003). However, standard NB model cannot handle the presence of excess zero counts in OFDI data. In contrast, a zero-inflated negative binomial regression model (ZINB) may be a better estimation technique to deal with this problem. Following Greene (2003) recommendation to apply the Vuong test (Vuong, 1989), one can determine whether the ZINB model better describes the data than standard NB model. The Vuong Z-score in this study has a significant and positive value, confirming that the ZINB model is a better choice in analyzing innovation outputs in essay 2. Similarly, I use the AIC test to compare the negative binomial model with ZINB model. The results show that AIC favors the ZINB model.

Table 19: List of developed countries

Europe			Other countries	developed economies (G7)
European Union	New EU member states	Other Europe		
EU-15	Bulgaria	Iceland	Australia	Canada
Austria	Croatia	Norway	Canada	Japan
Belgium	Cyprus	Switzerland	Japan	France
Denmark	Czech Republic		New Zealand	Germany
Finland	Estonia		United States	Italy
France	Hungary			United Kingdom
Germany	Latvia			United States
Greece	Lithuania			
Ireland	Malta			
Luxembourg	Poland			
Netherlands	Romania			
Portugal	Slovakia			
Spain	Slovenia			
Sweden				
United Kingdom				

5.4 Results

5.4.1 Hypotheses testing

Table 20 presents the descriptive statistics and a correlation matrix for all variables used in this study. I present the empirical testing results for innovation output in Table 21. I employ the zero-inflated negative binomial model to test the effects of firms' internationalization on their innovation output in the home country. Model 1 in Table 21 is the base model with all the control variables. I take 1-year lag for all explanatory variables. To observe changes in the explanatory power, I sequentially add the independent variables in the models.

I predict a positive relationship between OFDI in developed countries and their innovation output in the home market in Hypothesis 1. I add the variable *OFDI in the developed country* in Model 2 Table 21. The coefficient is positive and significant, which provides support for Hypothesis 1. Thus, Chinese firms' foreign investment in developed countries will increase their innovation output in the home market. I put the interaction of *OFDI in the developed country* with *performance below aspiration* in model 3 and with *performance above aspiration* in model 4 separately. The coefficient of interaction term of OFDI in the developed country and performance below aspiration is negative and significant, which consistent with Hypothesis 2a's prediction. Accordingly, for Chinese MNEs in developed countries, performance below and deviates from aspiration levels will decrease the influence of OFDI on innovation output. Meanwhile, the interaction of OFDI in the developed country and performance above aspiration in model 4 is not significant. Thus, hypothesis 2b is not supported.

Figure 7 demonstrates the moderating effect performance below aspiration based on Model 3 in Table 21. I plot the relationship between Chinese MNEs' foreign investment in developed countries and their innovation outputs in the home country

using the different level of performance below aspirations (1 standard deviation above and below mean for performance above and below aspirations). The downward slope for lower performance (deviates from aspiration level) conforms to my prediction of the moderating effect in Hypothesis 2a.

Hypothesis 3 posits that the impact of OFDI on firms' innovation output will be strengthened as firms' home country industry competition increases. To test the hypothesis, I construct an interaction between the OFDI in the developed country and industry competition in model 5. The positive and significant coefficient confirms the hypothesis.

Figure 8 demonstrates the moderating effect of industry competition based on Model 5 in Table 21. I plot the relationships between Chinese MNEs' foreign investment in developed countries and their innovation outputs in the home country using the different level of industry competition. The steeper slope for high industry competition (1 standard deviation above the mean) conforms to my prediction of a positive moderating effect in Hypothesis 3.

Table 20: Description and correlation (Essay 2)

	Mean	S. D.	1	2	3	4	5	6	7	8	9	10
1.Innovation	2.89	13.06	1									
2.OFDI in developed country	0.32	2.24	0.105	1								
3.Performance below aspiration	0.05	0.08	-0.021	-0.029	1							
4.Performance above aspiration	0.01	0.03	-0.002	0.024	-0.183	1						
5.Industry competition	0.61	0.48	0.008	-0.020	0.054	0.008	1					
6.Firm size	21.43	1.12	0.125	0.158	-0.175	-0.011	0.032	1				
7.Firm age	11.35	4.57	0.001	0.031	0.190	-0.019	0.079	-0.007	1			
8.Product diversification	0.29	0.40	-0.025	-0.023	0.028	-0.056	0.034	-0.027	0.087	1		
9.Intangible asset	16.31	4.70	0.028	0.075	0.033	-0.050	0.053	0.181	0.177	0.114	1	
10.Slack resource	-0.30	1.89	-0.013	-0.022	-0.120	0.102	-0.017	-0.223	-0.075	-0.042	-0.111	1
11.State ownership	0.30	0.26	-0.005	-0.024	-0.134	0.005	-0.051	0.170	-0.406	-0.146	-0.133	-0.028
12.IJV experience	0.79	2.50	0.030	0.127	-0.001	-0.014	0.005	0.210	0.209	0.072	0.116	-0.067
13.Previous foreign experience	1.20	8.56	0.108	0.174	0.006	-0.004	0.025	0.180	0.091	0.074	0.072	-0.036
14.Previous patent quality	0.39	0.44	0.065	0.111	-0.067	-0.004	0.021	0.329	0.082	0.074	0.144	-0.016
15.Board size	9.72	2.23	0.078	0.005	-0.020	0.013	0.002	0.226	-0.023	-0.012	0.046	-0.097
16.CEO duality	0.25	0.43	-0.014	-0.010	0.001	0.013	-0.011	-0.025	0.016	-0.020	-0.042	0.018
17.Ownership concentration	39.24	16.12	-0.003	0.003	-0.149	0.049	-0.058	0.212	-0.429	-0.142	-0.151	0.012
18.Foreign competition	0.24	0.20	0.111	0.055	0.047	0.002	-0.033	-0.026	0.199	0.039	0.072	0.015
19.Industry growth	22.51	10.41	-0.022	0.004	-0.056	-0.012	0.079	0.048	-0.044	0.007	-0.023	-0.053
20.Industry R&D intensity	1.41	0.72	0.020	0.010	-0.113	0.078	0.051	-0.045	-0.035	-0.019	0.028	0.048

	11	12	13	14	15	16	17	18	19	20
11.State ownership	1									
12.IJV experience	-0.115	1								
13.Previous foreign experience	-0.079	0.172	1							
14.Previous patent quality	-0.018	0.141	0.121	1						
15.Board size	0.065	0.036	0.034	0.071	1					
16.CEO duality	-0.015	-0.004	-0.040	-0.038	0.008	1				
17.Ownership concentration	0.576	-0.089	-0.083	-0.007	-0.023	-0.007	1			
18.Foreign competition	-0.128	0.113	0.155	0.148	-0.025	-0.024	-0.157	1		
19.Industry growth	0.109	-0.029	-0.044	-0.012	0.014	-0.003	0.028	-0.102	1	
20.Industry R&D intensity	0.089	-0.091	-0.007	0.109	0.033	-0.069	0.013	0.099	0.113	1

Table 21: Zero-inflated negative binomial regression on innovation

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm size	0.66***	0.65***	0.65***	0.65***	0.65***	0.64***
	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Firm age	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Product diversification	-0.26*	-0.26**	-0.27**	-0.26**	-0.26**	-0.27**
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
Technological capability	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Slack resource	0.06*	0.07*	0.06*	0.06*	0.07*	0.07*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
State ownership	0.34*	0.36*	0.37*	0.37*	0.37*	0.37*
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
IJV experience	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***
	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
Foreign experience	0.02*	0.02+	0.02*	0.02+	0.02+	0.02*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Previous innovation quality	1.59***	1.59***	1.59***	1.59***	1.59***	1.59***
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Board size	0.02	0.02	0.02	0.02	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
CEO duality	0.18*	0.18*	0.18*	0.18*	0.18*	0.18*
	(0.08)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Ownership concentration	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**
	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
Foreign competition	3.77*	3.77*	3.78*	3.77*	3.67*	3.68*
	(1.50)	(1.50)	(1.50)	(1.50)	(1.50)	(1.50)
Industry growth	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Industry R&D intensity	0.24+	0.24+	0.24+	0.24+	0.24+	0.24+
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
Performance below aspiration	-1.55**	-1.46*	-1.34*	-1.49**	-1.45*	-1.35*
	(0.59)	(0.58)	(0.57)	(0.58)	(0.57)	(0.57)
Performance above aspiration	0.39	0.22	0.05	-0.17	0.14	-0.06
	(1.21)	(1.20)	(1.21)	(1.22)	(1.20)	(1.24)
Industry concentration	-0.25	-0.25	-0.25	-0.25	-0.27+	-0.27+
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
OFDI in developed country (H1)		0.03**	0.05***	0.02+	0.002	0.03
		(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
OFDI in developed country (H2a)			-0.71***			-0.64***
×Performance below aspiration			(0.16)			(0.17)
OFDI in developed country (H2b)				0.52		0.10
×Performance above aspiration				(0.50)		(0.29)
OFDI in developed country (H3)					0.04***	0.04**
×Industry concentration					(0.01)	(0.01)
_cons	-17.56***	-17.29***	-17.23***	-17.27***	-17.22***	-17.17***
	(1.64)	(1.54)	(1.51)	(1.56)	(1.54)	(1.51)
N	5315	5315	5315	5315	5315	5315
ll	-6933.0	-6929.9	-6926.2	-6928.9	-6928.2	-6925.0
Incremental χ^2 to model 1		6.35**	13.74***	8.21*	9.71**	16.02**
Incremental χ^2 to model 2			7.40**	1.86	3.36*	9.67**

Robust standard errors in parentheses, based on a Huber-White sandwich estimator

$^{+}p < 0.1$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Fixed effects of year, region, and industry are included in all models

Figure 7: The moderating effect of performance relative to aspiration<0 for innovation output

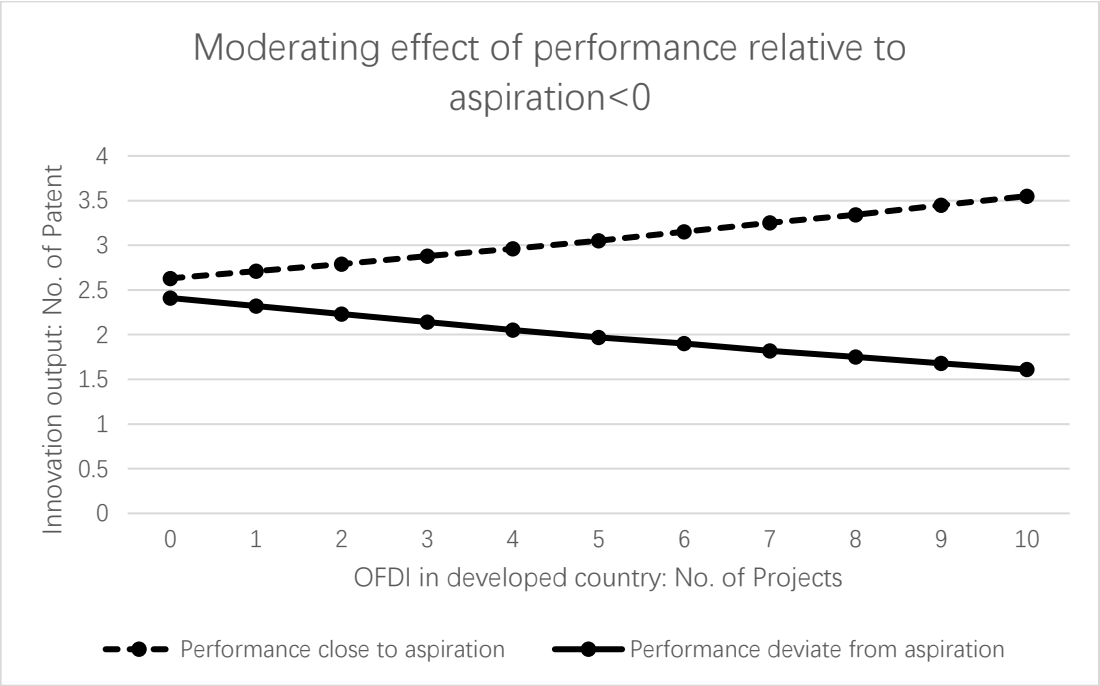
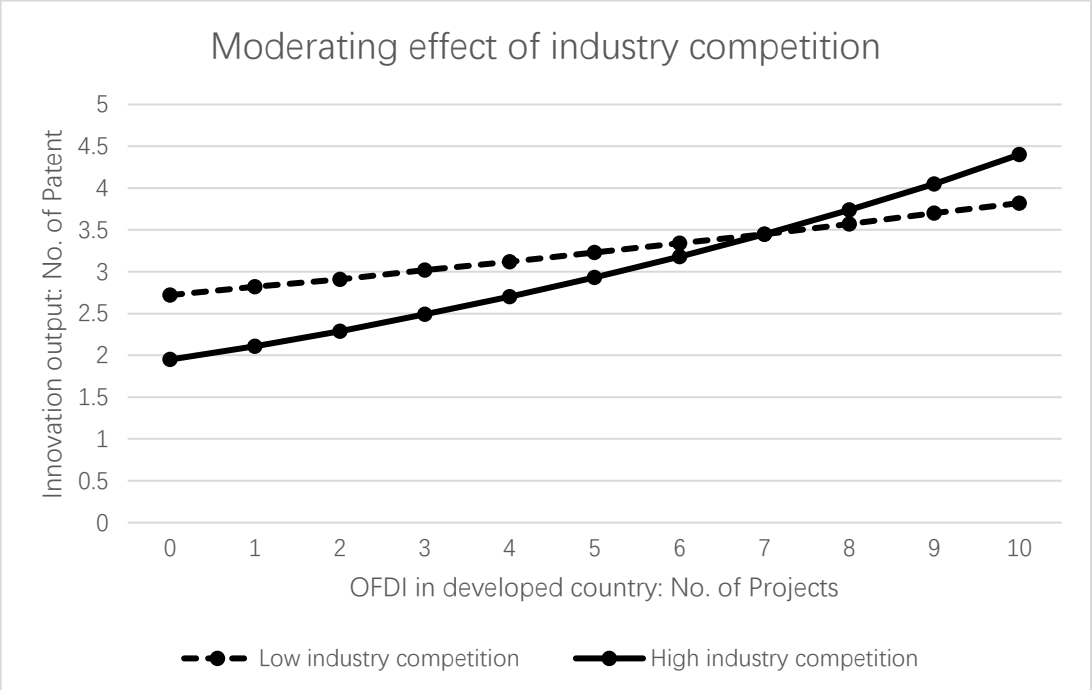


Figure 8: The moderating effect of industry competition for innovation output



5.4.2 Robustness Check

I conduct further sensitivity analyses to test the resulting robustness. One possibility for the main effects results could be firms' outstanding financial resources. Firms' slack financial resources could lead to higher foreign investment and innovation at the same time. Meanwhile, the effects of OFDI on innovation output need longer time to become obvious. Also, firms with higher innovation performance may further enter developed markets, causing concerns of endogeneity which threatens the empirical strategy. I control for the possible estimation biases in several ways. First, I alleviated this potential source of bias by including several variables that account for firm characteristics. I also used lagged independent variables to reduce the potential endogeneity bias, if any. Accordingly, I take two-year lag and three year lag of Chinese MNEs' OFDI to further test their effects on firms' innovation outputs in Table 22. The results on the effects of OFDI in the developed country on innovation output are consistent in all the models in Table 22. These results provide further support for my prediction that Chinese MNEs' foreign investment in developed markets could improve their innovation outputs in the home country.

Further, reverse causality problems may exist in the analysis as higher innovative capability could further persuade firms to invest in developed markets. To address the reverse causality issue, I employ the two-stage least square method to deal with the issue of endogeneity. Since it is difficult to carry out negative binomial regression model using instrumental variables, the first step is to apply logarithm transformation to the dependent variable, the number of patents granted. Then I run the fixed effect model using the specification in Table 23. The results from the fixed effect model are very similar to those from the ZINB regression, as shown in Table 21. The second stage involves choosing a valid instrument for the OFDI variable. I then used firms' foreign

currency deposits because this variable is associated with the internationalization, but not directly related to innovation. After the first stage as shown in Table 24, F test of excluded instrument shows F=19.97. Anderson-Rubin Wald test also provide strong support for this instrument variable (F=85.06, p<0.0001). Table 25 shows the results for the second stage. Finally, I replace the independent variable to count of OFDI projects and further test the hypotheses. The results in Table 26 show consistent results.

5.4.3 Supplementary Analysis

In addition to the main analysis and robustness check, I also do some supplementary analyses. First, I examine the effects of OFDI on the quality of patent. Except the amount of patent, quality is another significant perspective for innovation. Previous literature usually uses patent citation to measure the quality. Because of the data limitation in Chinese innovation dataset that is no citation data at this stage, I measure the quality of the patent by adopting the conventional approach based on the concentration of patent technology classes (Huang & Murray, 2009; Jia et al., 2015; Trajtenberg et al., 1997). As shown in Table 27, the direct effect of OFDI in a developed country is significant in Model 2 and 3. It shows that OFDI in developed countries also affects firms' innovation quality in their home country.

Second, I further test the effects of OFDI in developing countries on firms' innovation output. As shown in Table 28, OFDI in developing countries has a negative effect on firms' innovation. The reason behind this relationship is that with limited resources, investment in OFDI would decrease firms' development in innovation as they could not get updated knowledge from their OFDI in developing countries. These results further support my main argument that OFDI in developed countries could increase firms' innovation output in their home country.

Table 22: Zero-inflated negative binomial regression on innovation (lag three years)

	Model 1	Model 2	Model 3	Model 4
Firm size	0.65***	0.66***	0.66***	0.62***
	(0.05)	(0.04)	(0.05)	(0.05)
Firm age	-0.02	-0.02	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.02)
Product diversification	-0.26**	-0.25**	-0.24*	-0.22*
	(0.10)	(0.10)	(0.10)	(0.10)
Technological capability	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Slack resource	0.07*	0.06*	0.07*	0.08*
	(0.03)	(0.03)	(0.03)	(0.03)
State ownership	0.36*	0.32*	0.27	0.30+
	(0.16)	(0.16)	(0.17)	(0.17)
IJV experience	-0.01***	-0.01***	-0.01***	-0.01***
	(0.002)	(0.003)	(0.002)	(0.002)
Foreign experience	0.02+	0.02+	0.02+	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Previous innovation quality	1.59***	1.59***	1.53***	1.53***
	(0.09)	(0.09)	(0.09)	(0.09)
Board size	0.02	0.02	0.02	0.03
	(0.02)	(0.02)	(0.02)	(0.02)
CEO duality	0.18*	0.14+	0.10	0.10
	(0.07)	(0.08)	(0.08)	(0.08)
Ownership concentration	-0.01**	-0.01**	-0.01*	-0.01*
	(0.003)	(0.003)	(0.003)	(0.003)
Performance below aspiration	-1.46*	-1.59**	-1.40*	-1.30*
	(0.58)	(0.57)	(0.59)	(0.59)
Performance above aspiration	0.22	-0.19	0.26	-0.38
	(1.20)	(1.16)	(1.27)	(1.18)
Foreign competition	3.77*	4.11*	2.64	2.24
	(1.50)	(1.60)	(1.94)	(1.92)
Industry concentration	-0.25	-0.29	0.02	-0.09
	(0.16)	(0.18)	(0.31)	(0.32)
Industry growth	-0.003	-0.002	-0.004	-0.004
	(0.004)	(0.004)	(0.004)	(0.004)
Industry R&D intensity	0.24+	0.20	0.28+	0.28+
	(0.14)	(0.15)	(0.16)	(0.16)
OFDI in developed country (lag one year)	0.03**			0.04***
	(0.01)			(0.01)
OFDI in developed country (lag two years)		0.02*		0.02*
		(0.01)		(0.01)
OFDI in developed country (lag three years)			0.03*	0.03*
			(0.01)	(0.01)
_cons	-17.29***	-17.66***	-18.99***	-18.05***
	(1.54)	(1.46)	(1.42)	(1.46)
N	5315	4843	4207	4207
ll	-6929.9	-6582.1	-5958.0	-5953.7

Robust standard errors in parentheses, based on a Huber-White sandwich estimator

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Fixed effects of year, region, and industry are included in all models

Table 23: Effects of OFDI on innovation (OLS model with fixed effects)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm size	0.18***	0.18***	0.18***	0.18***	0.18***	0.18***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Firm age	0.01	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Product diversification	-0.001	-0.0004	-0.0003	-0.0004	-0.003	-0.003
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Technological capability	0.001	0.001	0.001	0.001	0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Slack resource	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
State ownership	0.11+	0.12+	0.11+	0.12+	0.12+	0.12+
	(0.07)	(0.07)	(0.07)	(0.07)	(0.06)	(0.06)
IJV experience	-0.003*	-0.003*	-0.003*	-0.003*	-0.002+	-0.002+
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Foreign experience	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Previous innovation quality	0.12***	0.12***	0.12***	0.12***	0.12***	0.12***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Board size	0.01	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
CEO duality	0.01	0.01	0.01	0.01	0.01	0.01
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Ownership concentration	-0.002+	-0.002+	-0.002	-0.002+	-0.002	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Performance below aspiration	-0.02	-0.03	-0.01	-0.03	-0.02	-0.01
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Performance above aspiration	-0.14	-0.14	-0.14	-0.15	-0.14	-0.12
	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)
Foreign competition	2.02***	2.03***	2.02***	2.03***	1.93***	1.93***
	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)
Industry concentration	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Industry growth	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Industry R&D intensity	0.01	0.01	0.01	0.01	0.01	0.01
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
OFDI in developed country (H1)		0.007*	0.01**	0.007*	-0.007	0.002
		(0.004)	(0.005)	(0.003)	(0.01)	(0.01)
OFDI in developed country (H2a)			-0.16*			-0.17*
×Performance below aspiration			(0.07)			(0.08)
OFDI in developed country (H2b)				0.02		-0.15
×Performance above aspiration				(0.12)		(0.13)
OFDI in developed country (H3)					0.03***	0.03***
×Industry concentration					(0.01)	(0.01)
_cons	-3.79***	-3.76***	-3.76***	-3.76***	-3.71***	-3.71***
	(0.43)	(0.43)	(0.43)	(0.43)	(0.43)	(0.43)
N	5315	5315	5315	5315	5315	5315
ll	-3973.7	-3971.6	-3968.9	-3971.5	-3960.3	-3957.4

Robust standard errors in parentheses, based on a Huber-White sandwich estimator
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Fixed effects of year, region, and industry are included in all models

Table 24:2SLS-first stage

	Model 1
Foreign currency deposits	0.014***
	(0.003)
Firm size	0.189***
	(0.041)
Firm age	0.003
	(0.010)
Product diversification	-0.227**
	(0.073)
Technological capability	0.019***
	(0.003)
Slack resource	0.007
	(0.008)
State ownership	-0.328*
	(0.158)
IJV experience	0.013*
	(0.005)
Foreign experience	0.030*
	(0.015)
Previous innovation quality	0.205**
	(0.070)
Board size	-0.040**
	(0.014)
CEO duality	-0.018
	(0.066)
Ownership concentration	0.001
	(0.003)
Performance below aspiration	0.209
	(0.257)
Performance above aspiration	1.594*
	(0.806)
Foreign competition	0.061
	(0.231)
Industry concentration	-0.080
	(0.079)
Industry growth	0.006+
	(0.004)
Industry R&D intensity	0.058
	(0.045)
_cons	-4.084***
	(0.905)
N	5315

Robust standard errors in parentheses
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 25:2SLS-second stage

	Model 1
OFDI in developed country	0.877***
	(0.210)
Firm size	0.029
	(0.055)
Firm age	-0.005
	(0.009)
Product diversification	0.124
	(0.080)
Technological capability	-0.020***
	(0.005)
Slack resource	0.013
	(0.009)
State ownership	0.289*
	(0.144)
IJV experience	-0.014**
	(0.005)
Foreign experience	-0.013
	(0.014)
Previous innovation quality	0.410***
	(0.077)
Board size	0.044**
	(0.014)
CEO duality	0.084
	(0.062)
Ownership concentration	-0.002
	(0.003)
Performance below aspiration	-0.242
	(0.247)
Performance above aspiration	-0.922
	(0.692)
Foreign competition	0.566**
	(0.219)
Industry concentration	0.061
	(0.075)
Industry growth	-0.007+
	(0.004)
Industry R&D intensity	0.046
	(0.042)
_cons	-0.605
	(1.192)
N	5315
ll	-11215.5

Robust standard errors in parentheses
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 26: Zero-inflated negative binomial regression on innovation (count of OFDI project)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm size	0.66***	0.66***	0.66***	0.65***	0.65***	0.65***
	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Firm age	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Product diversification	-0.26*	-0.26**	-0.26**	-0.25**	-0.26**	-0.26**
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
Technological capability	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Slack resource	0.06*	0.06*	0.06*	0.06*	0.06*	0.06*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
State ownership	0.34*	0.36*	0.36*	0.37*	0.36*	0.37*
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
IJV experience	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Foreign experience	0.02*	0.02+	0.02*	0.02*	0.02*	0.02*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Previous innovation quality	1.589***	1.59***	1.59***	1.59***	1.59***	1.59***
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Board size	0.02	0.02	0.02	0.02	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
CEO duality	0.18*	0.18*	0.18*	0.19*	0.18*	0.18*
	(0.08)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Ownership concentration	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Performance below aspiration	-1.55**	-1.51**	-1.40*	-1.52**	-1.49**	-1.43*
	(0.59)	(0.58)	(0.58)	(0.58)	(0.58)	(0.58)
Performance above aspiration	0.39	0.37	0.32	-0.10	0.32	-0.05
	(1.21)	(1.21)	(1.21)	(1.23)	(1.21)	(1.23)
Foreign competition	3.77*	3.87*	3.89**	3.82*	3.81*	3.80*
	(1.50)	(1.50)	(1.50)	(1.50)	(1.51)	(1.50)
Industry concentration	-0.25	-0.26	-0.26+	-0.26+	-0.27+	-0.27+
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
Industry growth	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Industry R&D intensity	0.24+	0.24+	0.24+	0.24+	0.24+	0.24+
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
OFDI in developed country (H1)		0.10+	0.15+	0.07	0.01	0.04
		(0.06)	(0.08)	(0.06)	(0.06)	(0.10)
OFDI in developed country (H2a)			-1.39*			-1.02
×Performance below aspiration			(0.69)			(0.95)
OFDI in developed country (H2b)				3.07*		2.24
×Performance above aspiration				(1.55)		(1.65)
OFDI in developed country (H3)					0.15**	0.11*
×Industry concentration					(0.05)	(0.05)
_cons	-17.56***	-17.48***	-17.47***	-17.41***	-17.43***	-17.39***
	(1.64)	(1.55)	(1.53)	(1.57)	(1.55)	(1.54)
N	5315	5315	5315	5315	5315	5315
ll	-6933.0	-6931.4	-6930.3	-6930.3	-6930.7	-6929.3

Robust standard errors in parentheses, based on a Huber-White sandwich estimator
$^{+}\ p < 0.1$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$
Fixed effects of year, region and industry are included in all models

Table 27: Supplementary Analysis-Effects on patent quality

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm size	0.0823***	0.0811***	0.0811***	0.0810***	0.0810***	0.0810***
	(0.0075)	(0.0075)	(0.0075)	(0.0075)	(0.0075)	(0.0075)
Firm age	-0.0061**	-0.0061**	-0.0061**	-0.0061**	-0.0061**	-0.0061**
	(0.0021)	(0.0021)	(0.0021)	(0.0021)	(0.0021)	(0.0021)
Product diversification	-0.0099	-0.0098	-0.0096	-0.0097	-0.0098	-0.0095
	(0.0148)	(0.0148)	(0.0148)	(0.0148)	(0.0148)	(0.0148)
Technological capability	-0.0003	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004
	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0013)
Slack resource	0.0028	0.0029	0.0029	0.0029	0.0029	0.0029
	(0.0030)	(0.0030)	(0.0030)	(0.0030)	(0.0030)	(0.0030)
State ownership	0.0186	0.0202	0.0205	0.0204	0.0204	0.0207
	(0.0295)	(0.0294)	(0.0294)	(0.0294)	(0.0294)	(0.0294)
IJV experience	-0.0002	-0.0002	-0.0003	-0.0002	-0.0002	-0.0002
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
Foreign experience	0.0005	0.0004	0.0005	0.0004	0.0004	0.0005
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)
Previous innovation quality	0.182***	0.184***	0.184***	0.184***	0.184***	0.184***
	(0.0131)	(0.0131)	(0.0131)	(0.0131)	(0.0131)	(0.0131)
Board size	0.0035	0.0037	0.0037	0.0037	0.0037	0.0037
	(0.0026)	(0.0026)	(0.0026)	(0.0026)	(0.0026)	(0.0026)
CEO duality	-0.0004	-0.0004	-0.0004	-0.0003	-0.0004	-0.0005
	(0.0129)	(0.0129)	(0.0129)	(0.0129)	(0.0129)	(0.0129)
Ownership concentration	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
Performance below aspiration	-0.0799	-0.0819	-0.0768	-0.0820	-0.0816	-0.0768
	(0.0690)	(0.0691)	(0.0692)	(0.0691)	(0.0691)	(0.0692)
Performance above aspiration	0.201	0.198	0.194	0.188	0.197	0.192
	(0.146)	(0.147)	(0.147)	(0.147)	(0.147)	(0.147)
Foreign competition	0.651**	0.655**	0.653**	0.655**	0.649**	0.648**
	(0.226)	(0.226)	(0.226)	(0.226)	(0.227)	(0.227)
Industry concentration	-0.0353	-0.0346	-0.0348	-0.0348	-0.0357	-0.0358
	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0228)	(0.0228)
Industry growth	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)
Industry R&D intensity	0.0380+	0.0383+	0.0383+	0.0385+	0.0384+	0.0383+
	(0.0217)	(0.0217)	(0.0217)	(0.0217)	(0.0217)	(0.0217)
OFDI in developed country (H1)		0.0037+	0.0061*	0.0031	0.0029	0.0051
		(0.0022)	(0.0028)	(0.0025)	(0.0030)	(0.0039)
OFDI in developed country (H2a)			-0.058			-0.0553
×Performance below aspiration			(0.0429)			(0.0466)
OFDI in developed country (H2b)				0.0454		0.0074
×Performance above aspiration				(0.0698)		(0.0762)
OFDI in developed country (H3)					0.0015	0.0012
×Industry concentration					(0.0034)	(0.0034)
_cons	-1.727***	-1.703***	-1.701***	-1.701***	-1.700***	-1.699***
	(0.203)	(0.202)	(0.203)	(0.203)	(0.203)	(0.203)
N	5315	5315	5315	5315	5315	5315

Robust standard errors in parentheses

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Fixed effects of year, region, and industry are included in all models

Table 28: Supplementary Analysis-Effects of OFDI in developing countries

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm size	0.66***	0.66***	0.67***	0.66***	0.66***	0.66***
	(0.06)	(0.06)	(0.07)	(0.06)	(0.07)	(0.07)
Firm age	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Product diversification	-0.26*	-0.26*	-0.26*	-0.26*	-0.26*	-0.26*
	(0.10)	(0.11)	(0.11)	(0.10)	(0.11)	(0.11)
Technological capability	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Slack resource	0.06*	0.06*	0.06*	0.06*	0.06*	0.07*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
State ownership	0.34*	0.34*	0.34*	0.35*	0.34*	0.35*
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
IJV experience	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Foreign experience	0.02*	0.02*	0.02*	0.02*	0.02*	0.02*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Previous innovation quality	1.59***	1.59***	1.59***	1.59***	1.59***	1.59***
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Board size	0.02	0.02	0.02	0.02	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
CEO duality	0.18*	0.14*	0.18*	0.19*	0.18*	0.18*
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Ownership concentration	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Performance below aspiration	-1.55**	-1.55**	-1.56**	-1.56**	-1.56**	-1.56**
	(0.59)	(0.59)	(0.60)	(0.59)	(0.60)	(0.60)
Performance above aspiration	0.39	0.38	0.38	0.31	0.38	0.31
	(1.21)	(1.22)	(1.22)	(1.22)	(1.21)	(1.22)
Foreign competition	3.77*	3.81*	3.81*	3.79*	3.81*	3.79*
	(1.50)	(1.50)	(1.50)	(1.50)	(1.50)	(1.50)
Industry concentration	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
Industry growth	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Industry R&D intensity	0.24+	0.25+	0.25+	0.25+	0.25+	0.25+
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
OFDI in developing country (H1)		-0.003***	-0.004	-0.003***	0.01	0.004
		(0.001)	(0.003)	(0.001)	(0.02)	(0.01)
OFDI in developing country (H2a)			0.03			0.04
×Performance below aspiration			(0.08)			(0.08)
OFDI in developing country (H2b)				0.13		0.15
×Performance above aspiration				(0.08)		(0.09)
OFDI in developing country (H3)					-0.01	-0.01
×Industry concentration					(0.02)	(0.02)
_cons	-17.56***	-17.64***	-17.65***	-17.63***	-17.63***	-17.63***
	(1.64)	(1.70)	(1.73)	(1.69)	(1.73)	(1.75)
N	5315	5315	5315	5315	5315	5315
ll	-6933.0	-6932.6	-6932.5	-6932.4	-6932.5	-6932.3

Robust standard errors in parentheses, based on a Huber-White sandwich estimator

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Fixed effects of year, region, and industry are included in all models

5.5 Discussion and Conclusion

Based on the empirical context of 638 Chinese listed firms in manufacturing industries between 2002 and 2010, I find that outward FDI in developed countries could improve firms' innovation outputs. Moreover, for Chinese MNEs in developed countries, performance below and deviates from aspiration levels will decrease the influence of OFDI on innovation output. Also, firms from industries with higher competitions in their home market could better and have a higher motivation to search and absorb the strategic assets, in turn, improve their innovation outputs in the home country.

This study makes three important contributions to the Chinese firms' outward FDI and innovation research in China. First, while previous studies focused primarily on inward FDI spillover benefits in terms of productivity improvement and new production introduction of local firms (Li et al., 2010, 2013; Meyer & Sinani, 2009), my study target to examine the effects of a new method to acquire knowledge and improve firms' innovative capabilities, outward FDI, on firms' innovation. Specifically, I find strong evidence of benefits of outward FDI in developed markets for firms' innovation. This finding lends support to my arguments that outward FDI is an active learning method for Chinese MNEs. Moreover, this study further proves that Chinese MNEs use outward FDI as a springboard strategy to acquire strategic-assets in developed markets (Luo & Tung, 2007).

Second, I also find evidence of contingency effects of performance relative to aspirations. Different from the direct effects of performance relative to aspirations on firms' R&D investment and innovation outputs in advanced markets (Chen, 2008; Chen & Miller, 2007; Greve, 2003a), it moderates the relationship between Chinese firms' outward FDI and innovation outputs.

Another finding reveals that industry competition in the home country also

facilitates Chinese MNEs' learning in outward FDI and further influence their innovation outputs. Traditional industrial organization thinking emphasizes that a firm' strategy and performance depends on the conditions within a given industry (Porter, 1990). The increasing competitive pressure acted as a selection mechanism. Firms that were more efficient became even stronger and were able to compete in global markets. Also, firms in the industry with higher competition have the motivation to further improve their competitive advantages to achieve a better status in industry competition.

Finally, this study contributes to the innovation empirical analysis in China. This is the first study to match the Chinese firms' outward FDI with their patent data and analyze their relationship. Different from previous studies mostly focused on aggregate data on Chinese patent, this study moves one step forward to analyze the patent application at the firm level and analyze firm-level effects on their innovation outputs. Moreover, this study tries to use the IPC class to measure the quality of patent and to remedy the limitation of Chinese patent data without citation information.

This study has several important limitations, which also provide opportunities for future research. First, to better capture the quality of patent by Chinese firms, future studies could attempt to match Chinese firms with their patent application in USPTO. As Chinese firms go global, they will also apply for patent protection in foreign markets for their valuable patents. This is another method to measure the quality of patent as Chinese firms will apply for the patent application for their most valuable inventions in advanced markets like USPTO. Second, as appropriate measures of absorptive capacity become available, future studies might examine how the absorptive capacity of Chinese firms moderates the benefits of outward FDI on firms' innovation.

CHAPTER SIX: DISCUSSION AND CONSOLIDATION OF THE RESULTS

6.1 Major Findings

The main objective of this dissertation is to study multinational enterprises from emerging market. This dissertation extends previous research by addressing two related questions: (1) How performance relative to aspirations affect Chinese firms' OFDI decisions? (2) How such OFDI decisions further influence firms' innovation in home country?

Theoretically, the first essay models the antecedents of Chinese firms' outward FDI from the behavioral theory of the firm perspective, while the second essay explores the consequences of outward FDI regarding their innovation outputs in the home country based on organizational learning. Empirically, I use Chinese listed firms in manufacturing industries during 2002 to 2010 to analyze the underlying relationships. Table 29 summarizes the empirical results of the hypotheses in this dissertation. Overall, the results provide reasonable support for the hypotheses.

While the current literature on the antecedents of Chinese firms' internationalization has largely drawn on the resource-based view, institutional theory, and industrial organizations, I consider the drivers from the behavioral theory of the firm perspective in Essay 1. I investigate behavioral explanations for the Chinese firms' OFDI by focusing on the effects of performance relative to aspiration level and extend the model of decision making to a competitive context to develop a theory about how foreign competition in domestic markets affects firms' decision making.

For firms performing above aspirations, I propose that the extent of firms' outward FDI increases following slack search argument. For firms performing below aspirations, outward FDI was not their matched solution for performance problem which is not consistent with the problemistic search. However, foreign competition increases their

probability to do a problemistic search through OFDI by affecting their resource allocation and focus of attention.

The outcome of Chinese firms' outward FDI is another focus of this dissertation in Essay 2. I analyze the relationship between firms' OFDI in the developed country and their innovation in the home market and theorize positive relationship for firms investing in developed markets. I show that firms' innovation outputs increase as they invested in developed markets. The results further provide support for the argument that Chinese MNEs use outward FDI as a springboard strategy to acquire strategic assets in advanced markets (Luo & Tung, 2007). Also, I find that performance relative to aspiration and industry competition moderating these relationships. Specifically, for firms performing below aspirations, as performance decreases, the benefits of outward FDI in developed countries on the innovation outputs decrease. Firms from industries with higher competitions in their home market could better and have higher motivation to search and absorb the strategic assets, in turn, improve their innovation outputs in the home country. In sum, the findings from these two essays have given empirical support for the hypotheses developed in this dissertation.

Table 29: Summary of Key Findings

Research Question	Hypotheses	Results
Essay 1: How does firms' performance relative to aspirations affect the extent of their OFDI?	Hypothesis 1a: As firms' performance falls below the aspiration level, the extent of firms' outward FDI decreases.	Supported
	Hypothesis 1b: As firms' performance increases above the aspiration level, the extent of firms' outward FDI increases.	Supported
	Hypothesis 2: As the level of foreign competition in home markets increases, the extent of firms' outward FDI increases.	Supported
	Hypothesis 3a: As firms' performance falls below the aspiration level, the extent of firms' outward FDI decreases less when there is higher foreign competition in home markets.	Supported
	Hypothesis 3b: As firms' performance increases above the aspiration level, the extent of firms' outward FDI increases more when there is higher foreign competition in home markets.	Not supported
Essay 2: How does firms' outward FDI influence their innovation output?	Hypothesis 1: Chinese MNE's outward FDI in developed markets positively affects its rate of launching innovations.	Supported
	Hypothesis 2a: Firms' performance relative to aspiration levels (below aspirations) negatively moderate the effect of outward FDI in developed markets on its rate of launching innovations.	Supported
	Hypothesis 2b: Firms' performance relative to aspiration levels (above aspirations) positively moderate the effect of outward FDI in developed countries on its rate of launching innovations.	Not supported
	Hypothesis 3: The greater the competition in an industry in the Chinese MNE's home country, the higher the (positive) effect of outward FDI in developed markets on its rate of launching innovations.	Supported

6.2 Significance of the Study

The importance of this study is its contribution by each of the two essays and the dissertation. Together with the rapid ascent of the Chinese economy, the globalization of Chinese enterprises has increased substantially. As China is trying to develop the world-class multinational enterprises with a full range of competencies (Alon & McIntyre, 2008), the globalization of Chinese firms has garnered increasing attention in the professional literature (Boisot & Meyer, 2008; Child & Rodrigues, 2005; Zeng & Williamson, 2007).

This dissertation proposes that performance relative to aspirations is an important factor in determining Chinese firms' outward FDI and for the extent to which a firm can benefit from the foreign knowledge. On the one hand, performance relative to aspirations influence firms' decision to search, which further influence their decision on outward FDI. On the other hand, as emerging economy firms cannot simply introduce new technologies into their domestic market without modifications, firms' performance relative to aspirations further influences their exposure to foreign knowledge and absorptive capacity to transfer this advanced knowledge to their innovations.

Second, this dissertation explores the importance of industry competition in their home country. From one perspective, foreign competition in domestic market could influence firms' resource allocation and focus of attention. This will further increase their motivation to invest in foreign markets. From another perspective, fierce industry competition including both domestic and foreign firms could provide firms the motivation to search for a market and advanced knowledge to further increase their bargaining power and competitive advantages in the domestic markets.

Third, this dissertation further proposes the importance of the home market for

Chinese firms. Even though the internationalization of Chinese firms has increased substantially, the home market is always their first target and focus. Using international expansion as a springboard to counter-attack global rivals in their home country market and improve their innovative capabilities in the home country are a major purpose for Chinese firms. In other words, international expansion is an important method for Chinese firms to better serve their home markets. Access to a broad range of strategic assets is an important factor in improving Chinese MNEs' capability. Building up their strength abroad offers the prospect of providing needed assets much faster and also of increasing the firms' bargaining power against local stakeholders who are constantly acting to reduce their profitability. Furthermore, they may channel back advanced technology and resources to upgrade their domestic manufacturing and develop new products for international markets (Luo & Tung, 2007). As a learning process for Chinese MNEs, instead of consuming resources, international diversification could provide firms more strategic assets for their subsequent innovation.

With the shift of research focus to Chinese MNEs, each of the two essays contributes to the literature in their ways. First, the first essay departs from the existing work that focuses on strategy tripod perspective on the Chinese MNEs to shift research attention toward the behavioral theory perspective. I propose that a theory of OFDI must include the factors that motivate decision makers to pursue major changes in corporate activities. Specifically, to address the determinant of OFDI, it is necessary to understand the perspective of managers situated within firms and what motivates them to initiate a search that eventuates in OFDI.

Second, my approach of examining the interactive effect of foreign competition in the industry and performance relative to aspirations on search behavior is novel and sheds lights on previous studies of the effect of the performance gap. My results also

add to a small but growing body of work that seeks to incorporate the role of the organizational context in theories of organizational strategies. Researchers have noted that theories based solely on individual-level explanations offer unrealistic representations of how strategic decisions are made within organizations (March & Shapira, 1987). My study exemplifies a complementary approach by suggesting that an important feature of the organizational environment, such as foreign competition, can moderate the effect of performance on search behavior.

Third, I contribute to the extant innovation literature, which has primarily focused on innovation of firm in the context of developed economies. I have drawn upon the organizational learning theory and latecomer literature to suggest that success to advanced knowledge in developed markets is critical for improving firm innovation in emerging markets. Also, different from existing studies that mainly use aggregate industry or regional data to analyze innovation outputs in China, my study is based on firm-level innovation data.

CHAPTER SEVEN: CONCLUSION

7.1 Directions for Future Research

First, this study proposes the need for a behavioral understanding of OFDI activity in particular and corporate strategy in general. Overall, the empirical results indicate the potential of behavioral variables to add to researchers' ability to explain internationalization decisions. Further research is necessary to explore more fully the applicability of behavioral theory to corporate phenomena. Also, for the international business area, future research could analyze if firms performing above or below aspirations might have different strategies in their foreign expansion like ownership strategy or location decisions. Also, even though this study is based on China, the results should have more general implications in other countries. Future studies could further test these effects in other developing or developed countries.

Second, firms might engage in problemistic search based on forecasted future performance, and a study contrasting historical and forward-looking performance relative to aspirations could inform researchers as to whether managers tend to be retrospective or prospective when they initiate search and changes in strategy. The question of whether the change is problem-driven or opportunity-driven arose early in the research on the behavioral theory of the firm. This study provides an important step in examining the relevance of problem-driven search for corporate strategy. Future research could compare these two motivations---problems and opportunities---for changes in corporate strategy.

Third, differences in governance may induce different corporate behaviors in response to performance feedback. Firms with weak governance structures may differ from those with strong governance both in their propensities to engage in outward FDI and the types of outward FDI that they undertake. Behavioral variables may not only

affect managements' motivation to change; they may also affect the strength of governance, which alters management's discretion to make changes. For example, the stringency of the constraints that a firm's board imposes on its managers may differ depending on the firm's performance relative to aspirations or on whether the firm is threatened with bankruptcy. Future research could advance beyond my analyses by empirically testing the direct and governance-mediated effects of behavioral variables on corporate strategy like outward FDI decisions. Furthermore, the effects on shareholder value of corporate responses to performance feedback may differ depending on firms' behavioral motivations and governance structures. A key issue for future research is whether managers responding to performance feedback make value-enhancing investment decisions. I encourage research examining governance as a moderator of behavioral explanations for corporate strategic changes and their performance implications.

Fourth, this study examines how outward FDI provides knowledge acquisition opportunities and contributes to innovation by firms in emerging markets. Also, future research with more comprehensive dataset could compare the effectiveness of different channels for obtaining foreign knowledge and, thus, provide more meaningful suggestions for firms that intend to improve their innovative capabilities. More interestingly, future research could investigate other types of internal efforts that improve firms' ability to absorb foreign knowledge and develop their innovative capabilities. Also, one could extend the current study to other emerging economies, such as Indian, to examine the external validity of the main findings.

Fifth, as the globalization of emerging economy firms and the 'flattening' of the world, poor, emerging markets no longer just borrow innovations from developed countries; from time to time they also contribute to innovations to the rest of the world,

including developed countries. This is reverse innovation proposed in the literature. Even though the cases of reverse innovation are still rare, as the emerging market firms' innovative capabilities improve, this is a promising area for future research.

7.2 Conclusion

Child and Rodrigues (2005) argued that instead of developing competitive advantages, Chinese firms expand internationally for the sake of overcoming competitive disadvantages that result from operating exclusively in domestic markets. Using a unique dataset of Chinese listed firms, I provide new conceptual and empirical insights into the internationalization of firms from large emerging economies. Specifically, I examine the determinant of outward FDI by Chinese firms by looking at their performance relative to aspiration levels, and foreign competition in the industries in their home market. Furthermore, I explore the outcome of Chinese firms' outward FDI with a specific focus on their innovation in the home country. The theoretical frameworks developed in this dissertation and the empirical findings presented in the two essays will have substantial implications for the research in internationalization, behavioral theory, and firm innovation.

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